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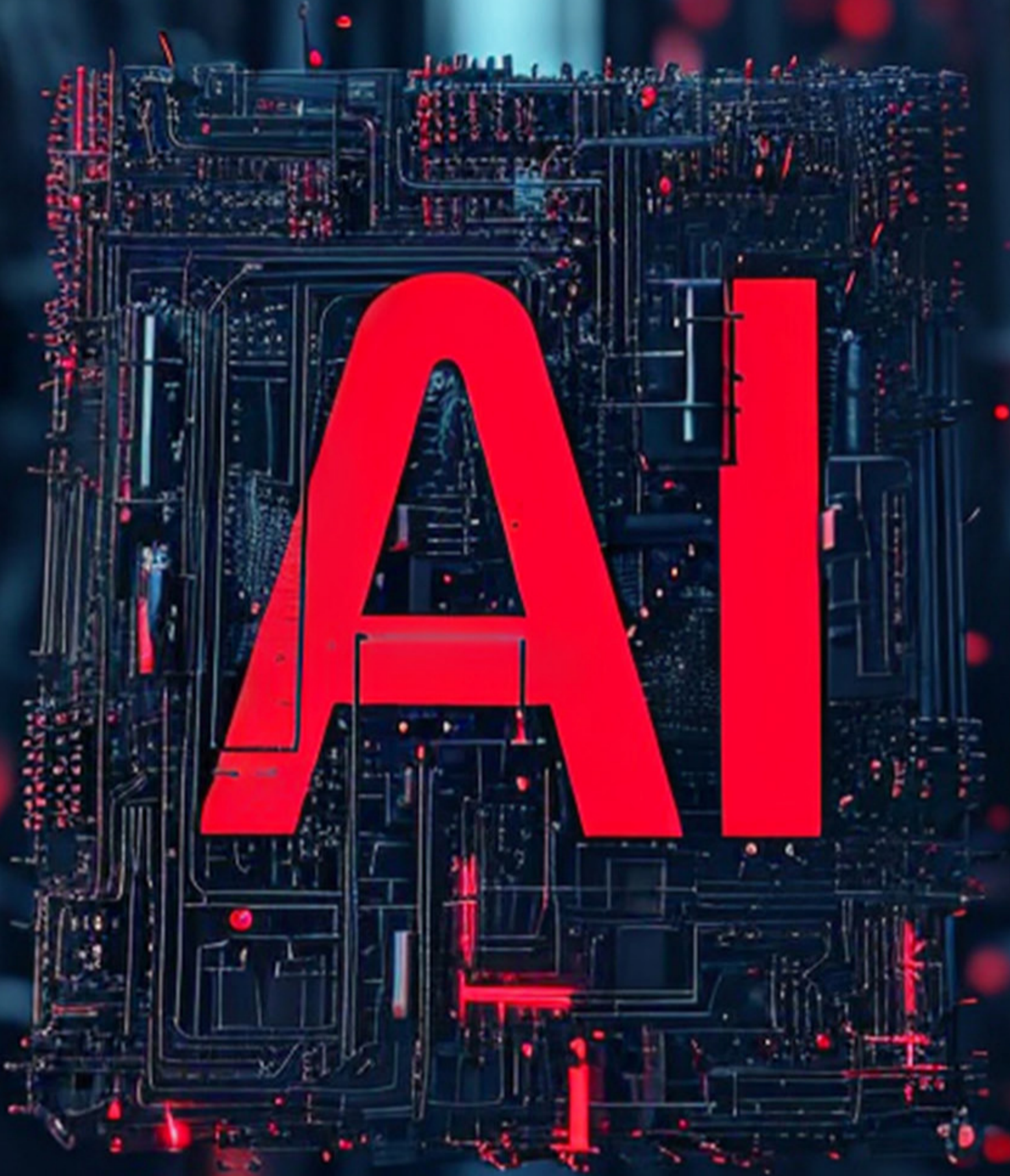

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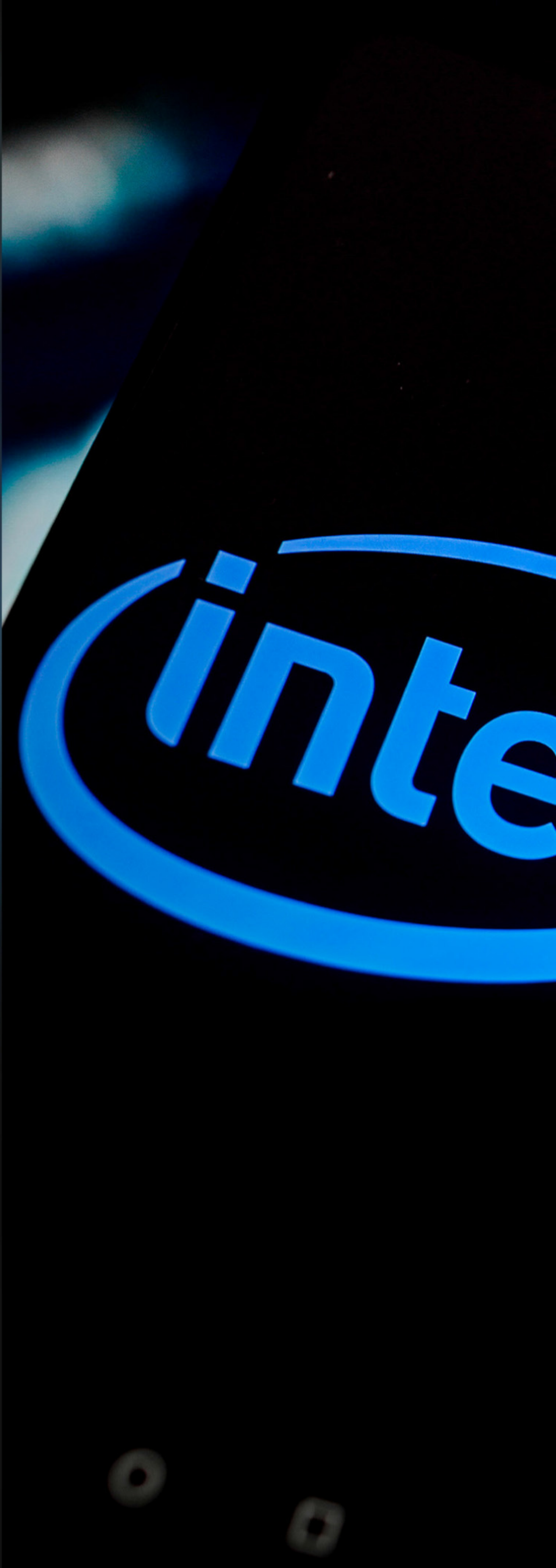
CEOS OF OPENAI AND INTEL CITE ARTIFICIAL INTELLIGENCE'S VORACIOUS APPETITE FOR PROCESSING POWER



Two tech CEOs scrambling to produce more of the sophisticated chips needed for artificial intelligence met for a brainstorming session Wednesday while the booming market's early leader reported another quarter of eye-popping growth.

The on-stage conversation between Intel CEO Pat Gelsinger and OpenAI CEO Sam Altman unfolded in a San Jose, California, convention center a few hours after Nvidia disclosed its revenue for the November-January period nearly quadrupled from the previous year.

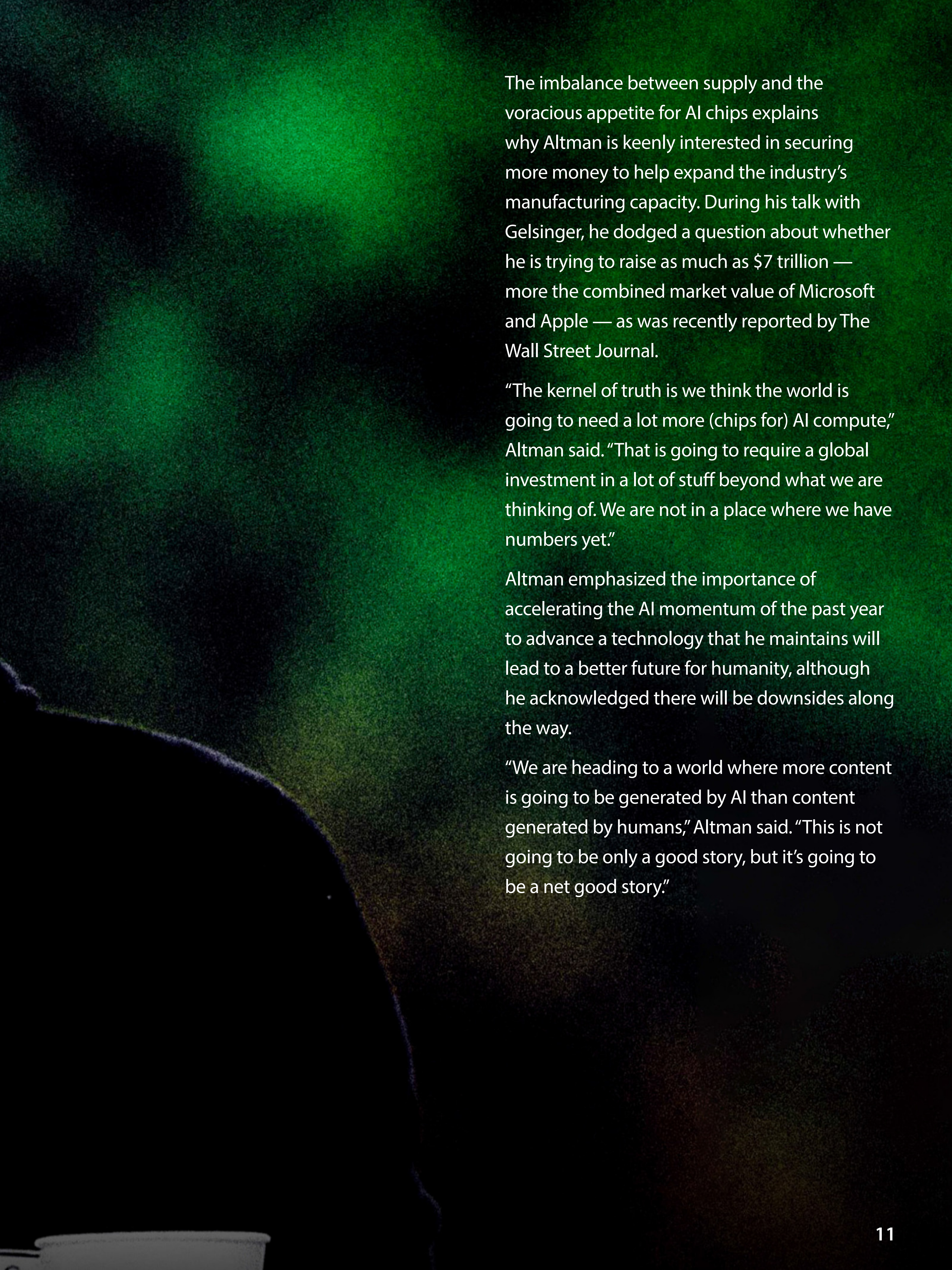
Image: Omar Marques

Intel, a Silicon Valley pioneer that has been struggling in recent years, laid out its plans for catching up to Nvidia during a daylong conference. Gelsinger kicked things off with a opening speech outlining how he envisions the feverish demand for AI-equipped chips revitalizing his company in a surge he dubbed the "Siliconomy."

"It's just magic the way these tiny chips are enabling the modern economic cycle we are in today," Gelsinger said.

OpenAI, a San Francisco startup backed by Microsoft, has become one of technology's brightest stars since unleashing its most popular AI innovation, ChatGPT, in late 2022. Altman is now eager to push the envelope even further while competing against Google and other companies such as Anthropic and Inflection AI. But the next leaps he wants to make will take far more processing power than what's currently available.

Image: Patrick T. Fallon



The imbalance between supply and the voracious appetite for AI chips explains why Altman is keenly interested in securing more money to help expand the industry's manufacturing capacity. During his talk with Gelsinger, he dodged a question about whether he is trying to raise as much as $7 trillion — more the combined market value of Microsoft and Apple — as was recently reported by The Wall Street Journal.

"The kernel of truth is we think the world is going to need a lot more (chips for) AI compute," Altman said. "That is going to require a global investment in a lot of stuff beyond what we are thinking of. We are not in a place where we have numbers yet."

Altman emphasized the importance of accelerating the AI momentum of the past year to advance a technology that he maintains will lead to a better future for humanity, although he acknowledged there will be downsides along the way.

"We are heading to a world where more content is going to be generated by AI than content generated by humans," Altman said. "This is not going to be only a good story, but it's going to be a net good story."

Perhaps no company is benefiting more from the AI gold rush now than Nvidia. The 31-year-old chipmaker has catapulted to the technological forefront because of its head start in making the graphics processing units, or GPUs, required to fuel popular AI products such as ChatGPT and Google's Gemini chatbot.

Over the past year, Nvidia has been a stunning streak of growth that has created more than $1.3 trillion in shareholder wealth in less than 14 months. That has turned it into the fifth most valuable U.S. publicly traded company behind only Microsoft, Apple, Amazon and Google's corporate parent, Alphabet Inc.

Intel, in contrast, has been trying to convince investors that Gelsinger has the Santa Clara, California, company on a comeback trail three years after he was hired as CEO.

Since his arrival, Gelsinger already has pushed the company into the business of making chips for other firms and has committed $20 billion to building new factories in Ohio as part of its expansion into running so-called "foundries" for third parties.

During Wednesday's conference, Gelsinger predicted that by 2030 Intel would be overseeing the world's second largest foundry business, presumably behind the current leader, Taiwan Semiconductor Manufacturing Co., or TMSC, largely by meeting the demand for AI chips.

"There's sort of a space race going on," Gelsinger told reporters Wednesday after delivering the conference's keynote speech. "The overall demand (for AI chips) appears to be insatiable for several years into the future."

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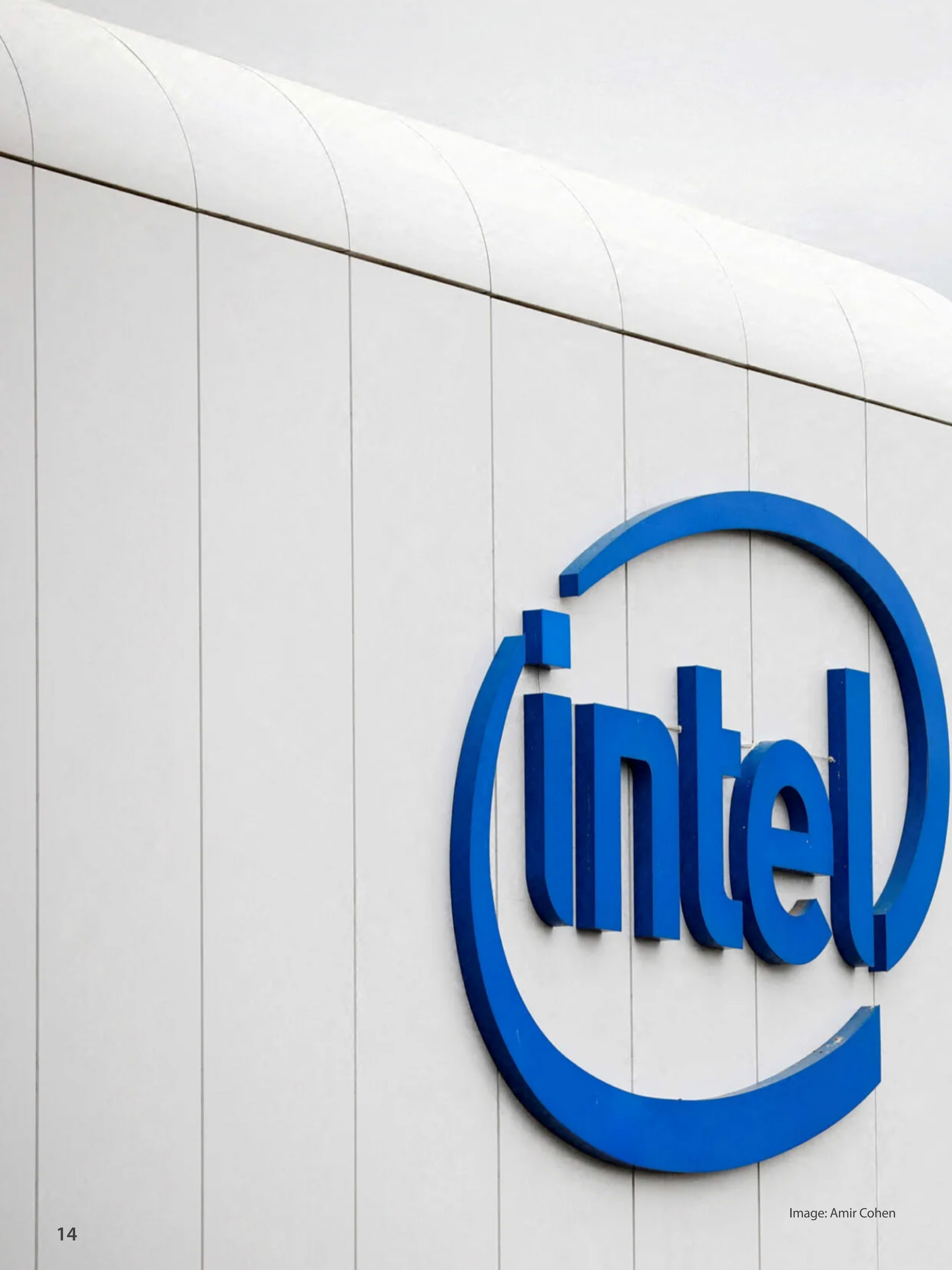

Image: Amir Cohen

Gelsinger's turnaround efforts haven't impressed investors so far. Intel's stock price has fallen by 30% under his reign while Nvidia's shares have increased by roughly fivefold during the same span.

Intel also is angling for a chunk of the $52 billion that the U.S. Commerce Department plans to spread around in an effort to increase the country's manufacturing capacity in the $527 billion market for processors, based on last year's worldwide sales.

Less than $2 billion of the funds available under the 2022 CHIPs and Science Act has been awarded so far, but Commerce Secretary Gina Raimondo, in a video appearance at Wednesday's conference, promised "a steady drumbeat" of announcements about more money being distributed.

Raimondo also told Gelsinger that she emerged from recent discussions with Altman and other executives leading the AI movement having a difficult time processing how big the market could become.

"The volume of chips they say they need is mind-boggling," she said.

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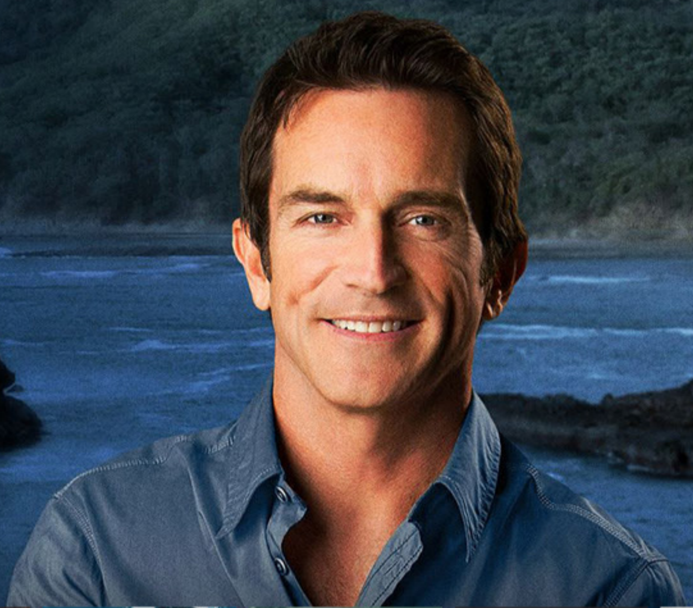

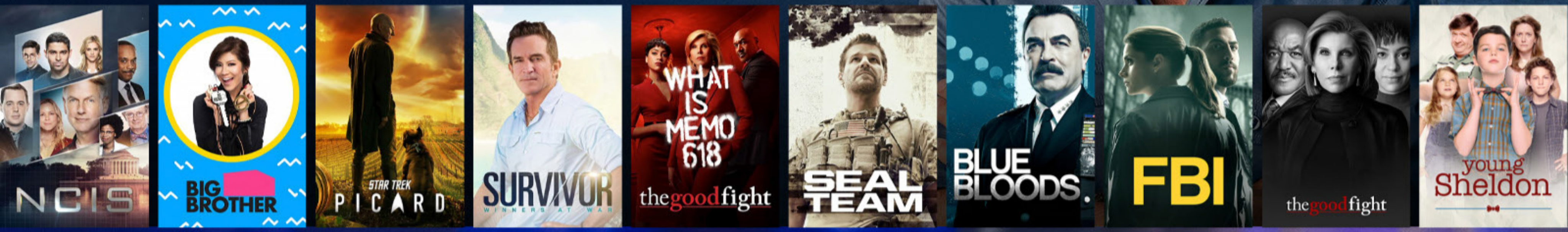
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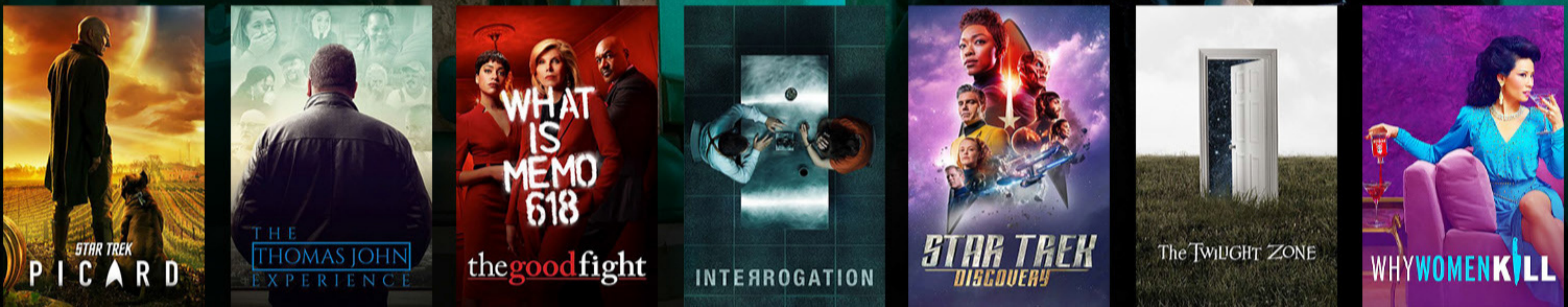
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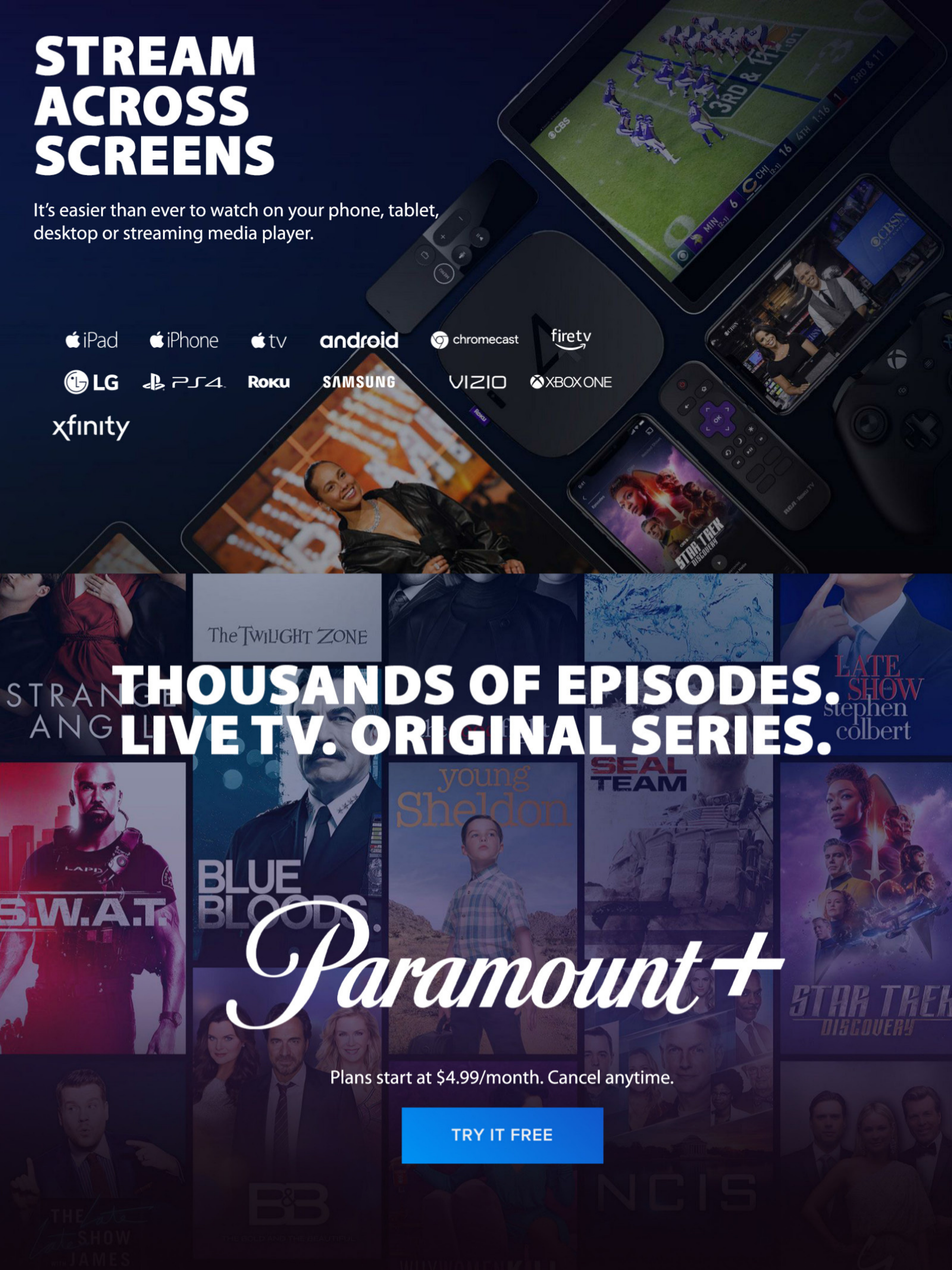

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BIDEN IS BOOSTING CYBERSECURITY AT US PORTS, WHERE ONLINE ATTACKS CAN BE MORE RAVAGING THAN STORMS

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President Joe Biden signed an executive order and created a federal rule aimed at better securing the nation's ports from potential cyberattacks.

The administration is outlining a set of cybersecurity regulations that port operators must comply with across the country, not unlike standardized safety regulations that seek to prevent injury or damage to people and infrastructure.

"We want to ensure there are similar requirements for cyber, when a cyberattack can cause just as much if not more damage than a storm or another physical threat," said Anne Neuberger, deputy national security adviser at the White House.

Nationwide, ports employ roughly 31 million people and contribute $5.4 trillion to the economy, and could be left vulnerable to a ransomware or other brand of cyberattack, Neuberger said. The standardized set of requirements is designed to help protect against that.

The new requirements are part of the federal government's focus on modernizing how critical infrastructure like power grids, ports and pipelines are protected as they are increasingly managed and controlled online, often remotely. There is no set of nationwide standards that govern how operators should protect against potential attacks online.

The threat continues to grow. Hostile activity in cyberspace — from spying to the planting of malware to infect and disrupt a country's infrastructure — has become a hallmark of modern geopolitical rivalry.

For example, in 2021, the operator of the nation's largest fuel pipeline had to temporarily halt operations after it fell victim to a ransomware attack in which hackers hold a victim's data or device hostage in exchange for money. The company, Colonial Pipeline, paid $4.4 million to a Russia-based hacker group, though Justice Department officials later recovered much of the money.

Ports, too, are vulnerable. In Australia last year, a cyber incident forced one of the country's largest port operators to suspend operations for three days.

In the U.S., roughly 80% of the giant cranes used to lift and haul cargo off ships onto U.S. docks come from China, and are controlled remotely, said Admiral John Vann, commander of the U.S. Coast Guard's cyber command. That leaves them vulnerable to attack, he said.

Late last month, U.S. officials said they had disrupted a state-backed Chinese effort to plant malware that could be used to damage civilian infrastructure. Vann said this type of potential attack was a concern as officials pushed for new standards, but they are also worried about the possibility for criminal activity.

The new standards, which will be subject to a public comment period, will be required for any port operator and there will be enforcement actions for failing to comply with the standards, though the officials did not outline them. They require port operators to notify authorities when they have been victimized by a cyberattack. The actions also give the Coast Guard, which regulates the nation's ports, the ability to respond to cyberattacks.

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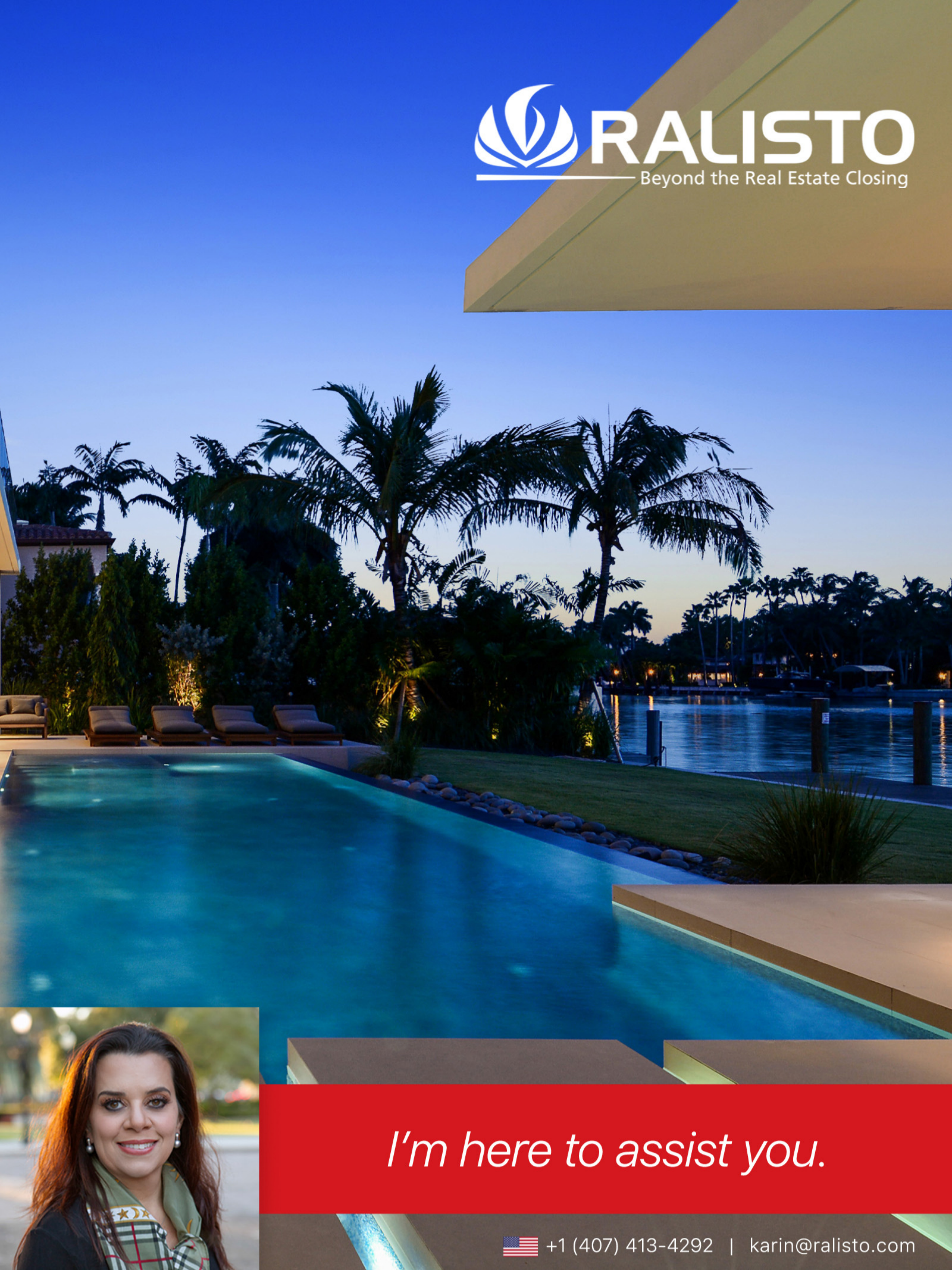
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HYUNDAI'S SUPERNAL AND EMBRAER-BACKED EVE AIR MOBILITY SEE FUTURE IN ELECTRIC-POWERED AIR TAXIS

As the aviation sector seeks ways to make air travel less polluting and more sustainable, aerospace company Embraer and South Korean automaker Hyundai are among the companies betting on a new form of air travel -– air taxis.

Hyundai's Supernal and Embraer-backed Eve Air Mobility are developing electric aircraft that take off and land vertically. The idea is that such air taxis might provide a sustainable form of air transport for densely populated cities and areas with less developed public transport networks.

Experts say they could help offset carbon emissions from the traditional aviation sector, but there are plenty of technological and regulatory challenges to making air taxis commercially viable.

Falling battery prices, advancements in technology and the participation of big players like Hyundai mean that such aircraft could soon be a reality, experts say.

Hyundai's advanced air mobility unit Supernal and Embraer-backed Eve Air Mobility hope to officially launch electric-powered air taxis within the next two to four years.

"Ground transportation is evolving and improving, but to support all the mobility demands of ... people in urban areas, ground transport will not be sufficient," Supernal's CEO Shin Jaiwon said in an interview. "We have to open the skies above the cities."

Supernal's S-A2 electric aircraft, equipped with eight rotors, is designed to carry a pilot and four passengers. The battery-powered air taxi will have a range of about 25 to 40 miles and will be able to take off and land vertically. It's similar to a helicopter, but quieter and more sustainable

EVE

in that it can help offset carbon emissions generated from traditional air travel, Shin said.

Supernal plans to test its first full-scale technology demonstration version in California this year and is in contact with the U.S. Federal Aviation Administration and the E.U's aviation safety agency about policies and certification issues.

Earlier this week, Supernal and Singapore's civil aviation authorities and officials in economic development formed a partnership to jointly develop the advanced air mobility sector in terms of research and regulatory frameworks.

Brazilian firm Eve Air Mobility, a spin-off of the third-largest aircraft manufacturer Embrarer, also is testing and developing an electric vertical take-off and landing (eVTOL) aircraft which it hopes to launch by 2026.

Like Supernal's S-A2, the Eve Air Mobility's aircraft is also expected to carry between four to six passengers with a range of 60 miles, without generating any local carbon emissions.

Johann Bordais, CEO of Eve Air Mobility, says that the electric-powered aircraft could a new alternative for getting around in cities or areas lacking good public transport but they're not replacements for traditional aircraft.

"We're going to be putting more people in the air, we're giving an alternative -– just like electric vehicles are on the ground in 2D, we want to make sure that we can make the same thing that happens but in 3D," Bordais said.

Air taxis are just one of many ways that the aviation sector is considering to improve sustainability. Airlines are moving toward using a blend of sustainable aviation fuel made from renewable sources, with the industry aiming for net zero emissions by 2050. Aviation firms are also designing more fuel-efficient aircraft and engines.

The effort also requires regulatory changes.

"For the aviation industry to really take off in a sustainable manner, we have to look at how government policies can help create a conducive environment for new technologies and industries to take shape on a global level," said Mabel Kwan, managing director of Alton Aviation Consultancy.

For now, the air taxi industry and other forms of air mobility still have hurdles to cross, such as the battery costs, devising new regulatory and safety frameworks for such travel, and certifying such aircraft.

With suitable regulatory changes, the technology has developed to the point, however, where air taxis are feasible, said Brendan Sobie, an independent aviation analyst based in Singapore.

“There’s the feasibility of operating in various environments, various air spaces, various cities and urban environments,” said Brendan Sobie.

Supernal’s Shin acknowledged that battery costs are still high for vehicles like air taxis.

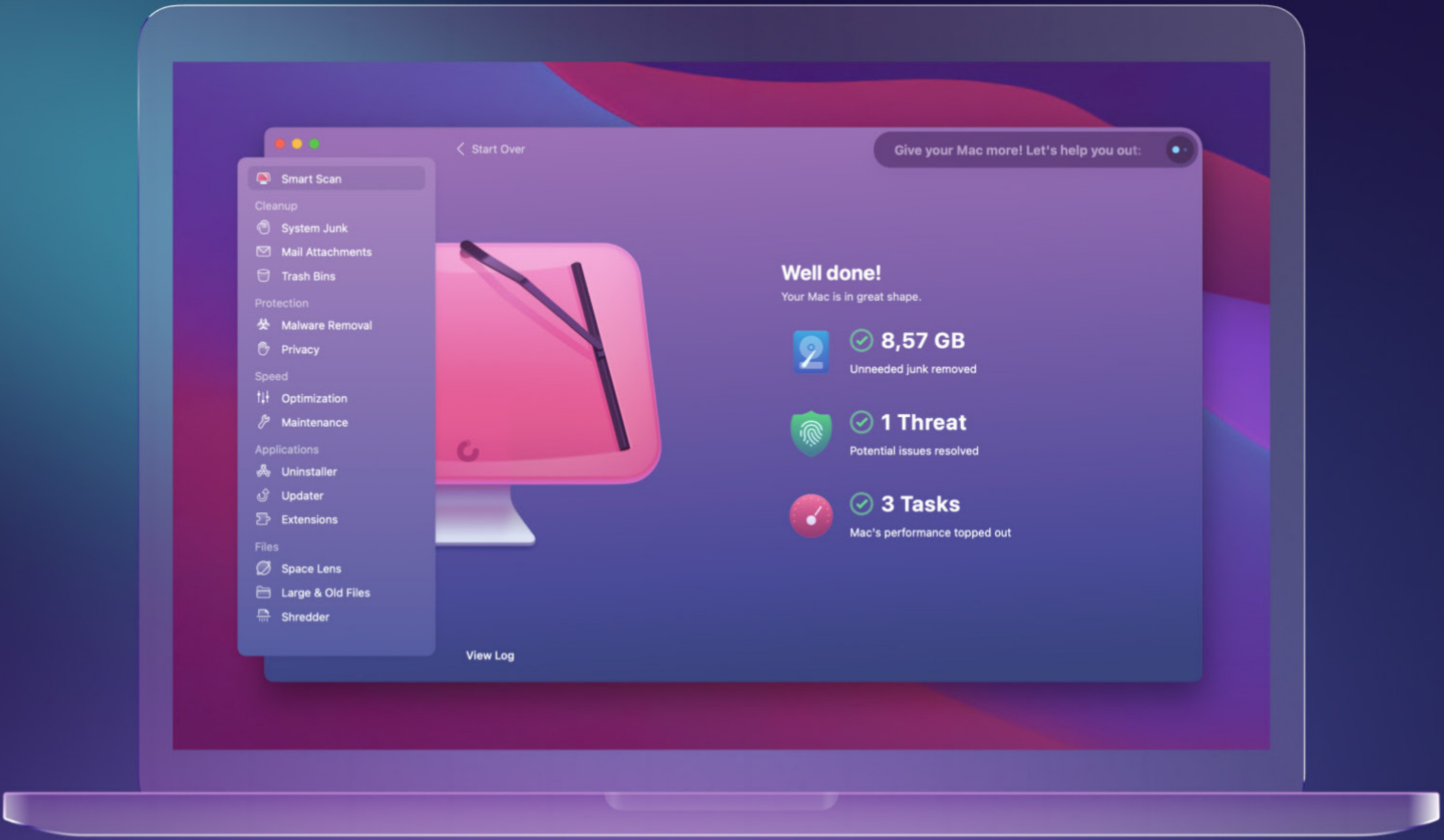
“However, as battery technologies continue to improve and further develop over time, we believe that manufacturing will also be improved and developed, so the overall cost of making such vehicles will be going down,” he said.

Supernal can tap into Hyundai’s know-how and mass production capabilities to achieve high quality and bring down the costs of making its air taxis, Shin said.

Eve Air Mobility’s Bordais was also upbeat, saying his company can draw on Embraer’s decades of certifying and manufacturing aircraft.

“We know what we’re doing, we’ve done it,” he said.

“We don’t want to be the first one. We want to be the right one,” Bordais said. “We’re here for the long run. You’ll see these (aircraft) flying around in 2026.”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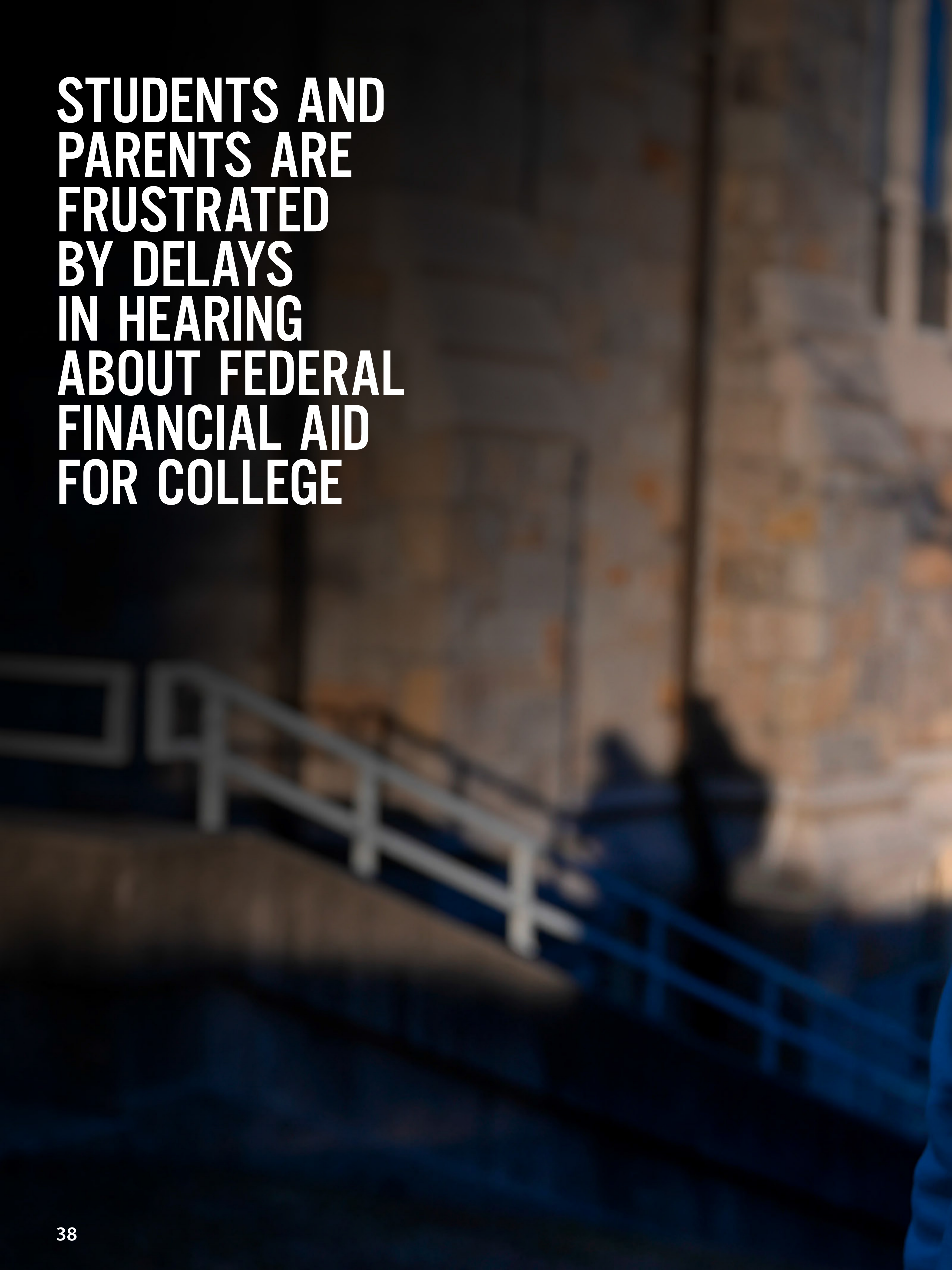

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For many students, the excitement of being accepted into their first-choice college is being tempered this year by a troublesome uncertainty over whether they'll get the financial aid they need to attend.

The financial aid decisions that usually go out with acceptance letters are being delayed because of a later-than-expected rollout of a revised Free Application for Federal Student Aid, the form commonly known as FAFSA that schools use to compute financial aid.

The result: Students and their parents are putting off their college decisions.

"We are not going to make a decision without knowing what we're committing to financially; it would be irresponsible to do that," said Jenny Nicholas of Keene, New Hampshire. She wants to make sure that her son, a high school senior, goes to a college that is most affordable for their family.

The Education Department said the form would be easier for parents to fill out and used a new formula to compute eligibility for aid that took inflation into account. But it wasn't ready in October, when the forms for the coming school year are usually released. During a soft launch in December, it was difficult for many people to access the form. And the initial release didn't include the updated inflation tool.

Schools won't get the information they need to award financial aid until next month, forcing them to adapt. Some have moved away from the popular May 1 deadline for students to accept their offers of admission.

Just this past week, Virginia Tech, for example, said it had moved its admissions deposit

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deadline for first-year college students to May 15. "Understandably so, families are concerned about the FAFSA process this year, and they are telling us that they need more time to make fully informed decisions," Juan Espinoza, interim vice provost for enrollment management, said in a statement.

The school said it anticipated notifying families about financial aid in mid-April.

"We can't make a decision until we see a financial aid package," said Agata James, a mother of a New York high school senior from Queens. "Everything is in limbo."

James' son decision is torn between two colleges, one in his home state and the other an out-of-state university that is his dream school. But James says the decision will come down to what she can afford without accumulating a large amount of student loan debt.

The Education Department has said it is working to alleviate the consequences of the delays. Some of these steps taken are reducing verification requirements, sending federal experts to under-resourced schools and allocating money for technical assistance to non-profit groups.

"We are determined to get this right," Education Secretary Miguel Cardona said in a statement this month. "We must, and we will."

More than 17 million students use the FAFSA every year to receive financial aid for their college education. As of mid-February, more than 4 million forms have been successfully submitted, the department said.

Rachel Reniva of Dothan, Alabama, said the financial aid decision will affect not only her son's future but also her entire family's.

Even though the Education Department said the new application would be simpler to use, some students and parents still are having trouble filing.

Jesus Noyola, a sophomore attending Rensselaer Polytechnic Institute in Troy, New York, said he hasn't been able to submit his form because of an error in the parent portion of the application.

"It's disappointing and so stressful since all these issues are taking forever to be resolved," said Noyola, who receives grants and work-study to fund his education.

Other errors have been linked to Social Security numbers, said Travis Hill, director for Dallas County Promise, a college success program in Texas.

Parents without legal immigration status are not able to submit their portion of the application because they don't have a Social Security number. Other parents are also encountering errors linking their Social Security number with their child's FAFSA application.

"I'm feeling stressed," said Lorenzo Jaramillo, 17, a high school senior who is looking to major in computer engineering. Although Jaramillo lives in Toronto, he is a U.S. citizen and thus eligible for financial aid.

Helen Faith, director of the Office of Financial Aid at the University of Wisconsin-Madison, said she worries that the delays will harm both students and schools.

"What ends up happening is that our underrepresented and most fragile populations are the ones that are disproportionately affected," said Hill.

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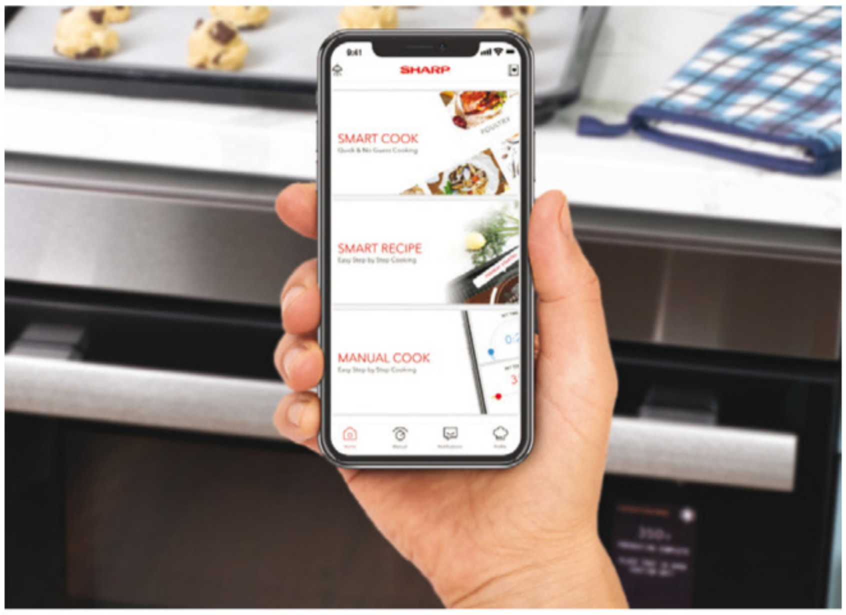

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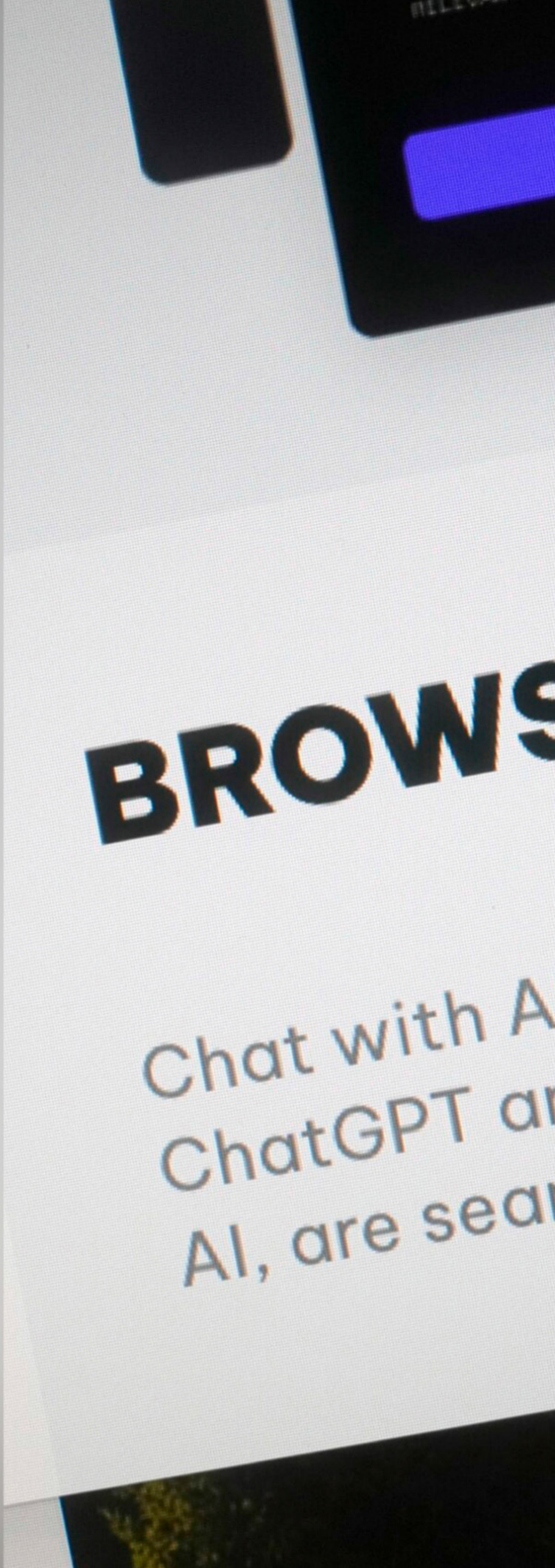

It's not just you. A lot people think Google searches are getting worse. And the rise of generative AI chatbots is giving people new and different ways to look up information.

While Google has been the one-stop shop for decades — after all, we commonly call searches "googling" — its longtime dominance has attracted a flood of sponsored or spammy links and junk content fueled by "search engine optimization" techniques. That pushes down genuinely useful results.

A recent study by German researchers suggests the quality of results from Google, Bing and

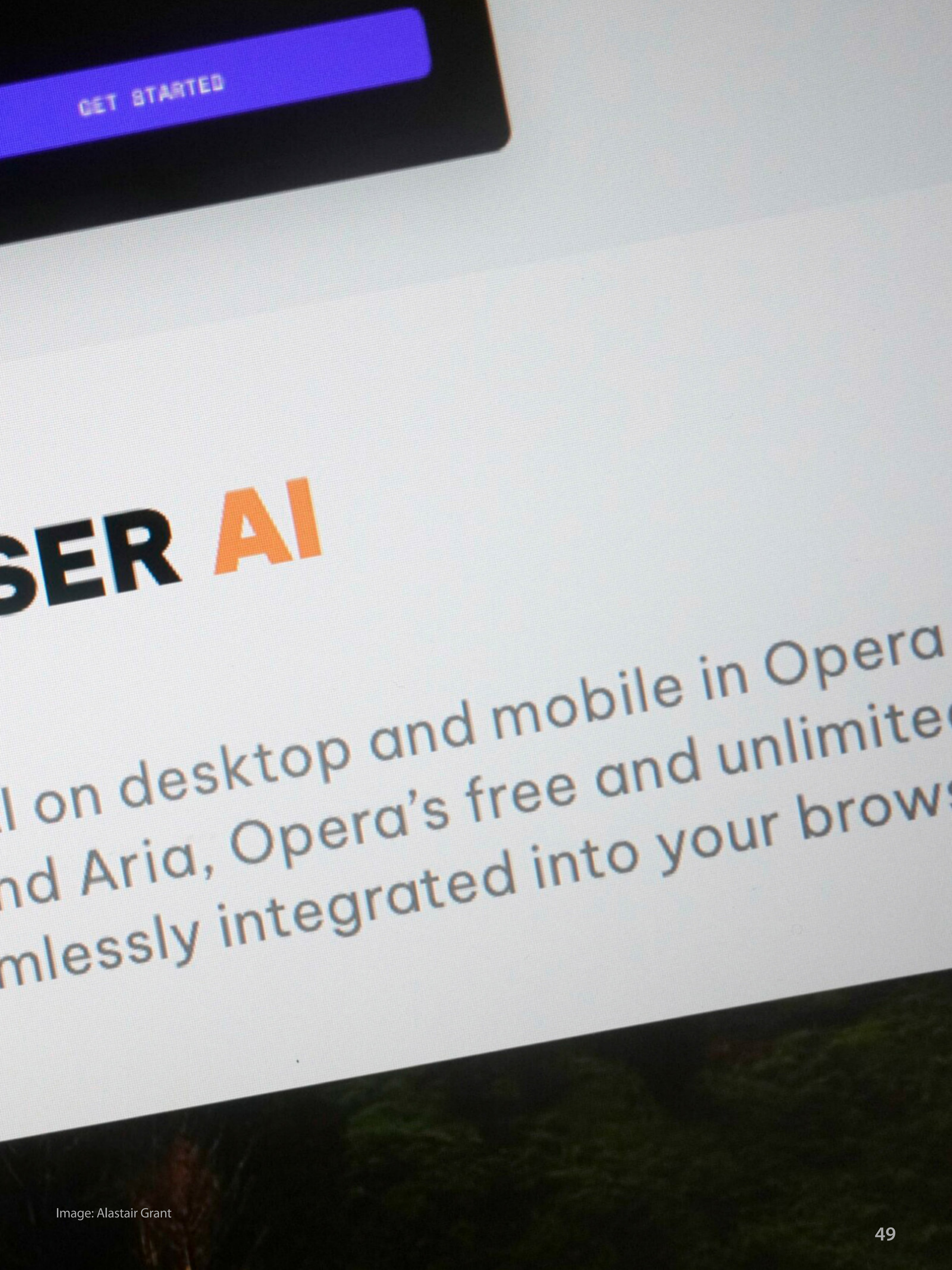

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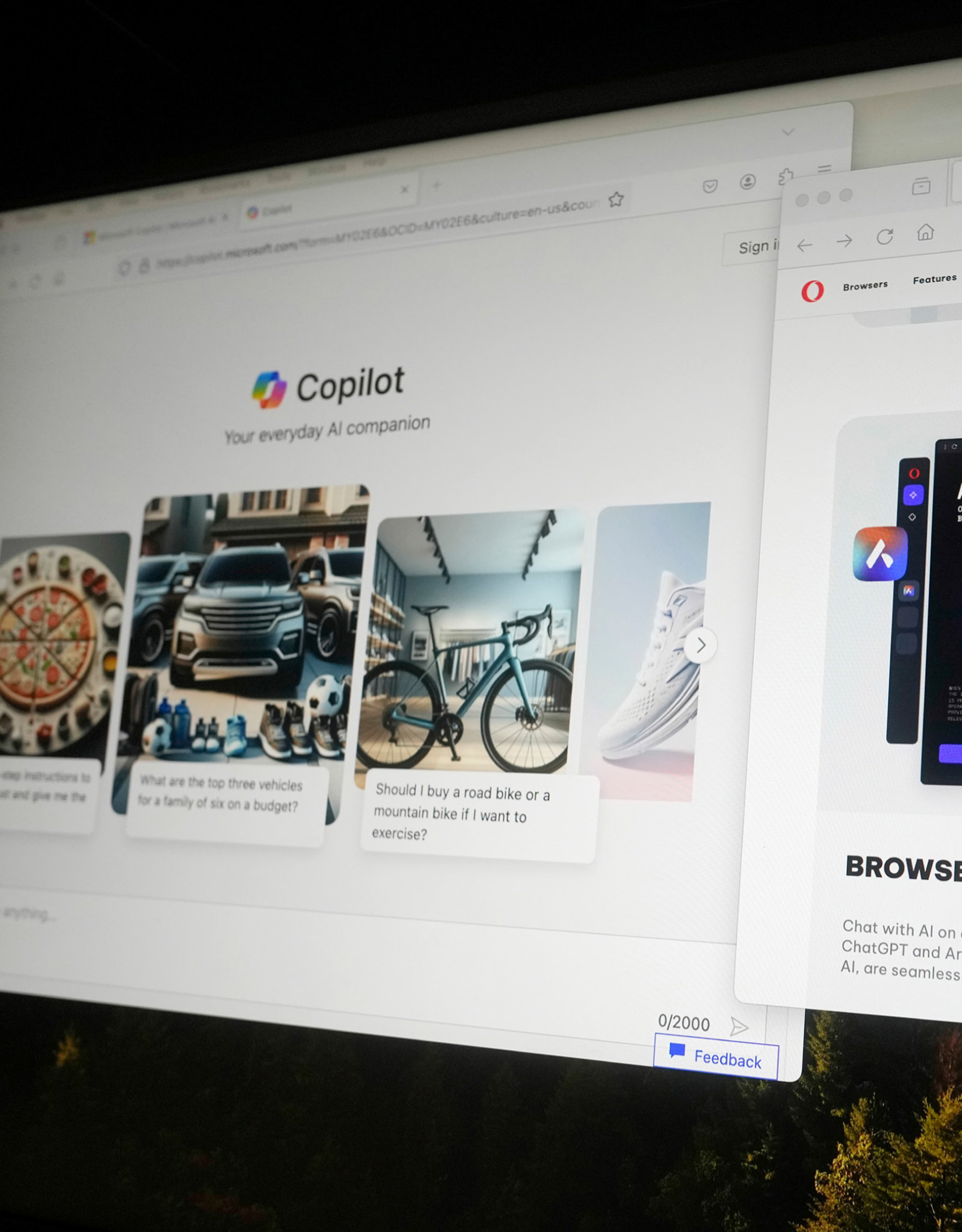
Image: Alastair Grant



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Copilot

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Should I buy a road bike or a mountain bike if I want to exercise?

BROWSE

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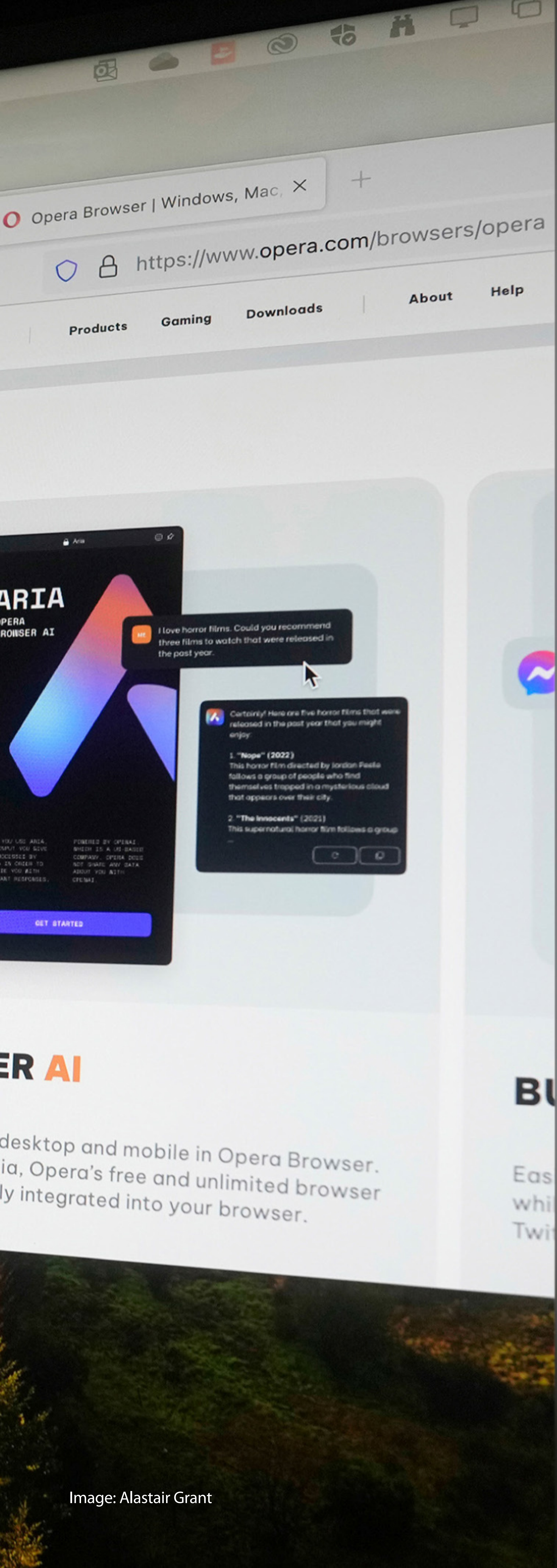
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Image: Alastair Grant

DuckDuckGo is indeed declining. Google says its results are of significantly better quality than its rivals, citing measurements by third parties.

Now, chatbots powered by generative artificial intelligence, including from Google itself, are poised to shake up how search works. But they have their own issues: Because the tech is so new, there are concerns about AI chatbots' accuracy and reliability.

If you want to try the AI way, here's a how-to:

WHERE DO I FIND AI SEARCH TOOLS?

Google users don't have to look far. The company last year launched its own AI chatbot assistant, known as Bard, but recently retired that name and replaced it with a similar service, Gemini.

Bard users are now redirected to the Gemini site, which can be accessed directly on desktop or mobile browsers.

The Gemini app also launched in the U.S. this month and is rolling out in Japanese, Korean and English globally — except in Britain, Switzerland and Europe — according to an update notice, which hints that more countries and languages will be "coming soon."

Google also has been testing out a new search offering, dubbed "Search Generative Experience" that replaces links with an AI-generated snapshot of key info. But it's limited to U.S. users signing up through its experimental Labs site.

Microsoft's Bing search engine has provided generative AI searches powered by OpenAI's ChatGPT technology for about a year, first under the name Bing Chat, now rebranded as Copilot.

On the Bing search home page, click the Chat or Copilot button underneath the search window and you'll get a conversational interface where you type your question. There's also a Copilot app.

A slew of startup AI search sites have emerged, but they aren't as easy to find. A standard Google search isn't that helpful, but searches on Copilot and Bard turned up a number of names, including Perplexity, HuggingChat, You.com, Komo, Andi, Phind, Exa and AskAI.

DO I HAVE TO SIGN UP OR PAY FOR THEM?

Most of these services have free versions. They typically limit how many queries you can make but offer premium levels that provide smarter AI and more features.

Gemini users, for example, can pay $20 for the advanced version, which comes with access to its "most capable" model, Ultra 1.0.

Gemini users need to be signed in to their Google accounts and be at least 13 years old — 18 in Europe or Canada. Copilot users don't have to to sign in to a Microsoft account and can access the service through Bing search or Copilot home pages.

Startup sites are largely free to use and don't require setting up an account. Many also have premium levels.

HOW DO I DO AN AI SEARCH?

Rather than typing in a string of keywords, AI queries should be conversational — for example, "Is Taylor Swift the most successful female musician?" or "Where are some good places to travel in Europe this summer?"

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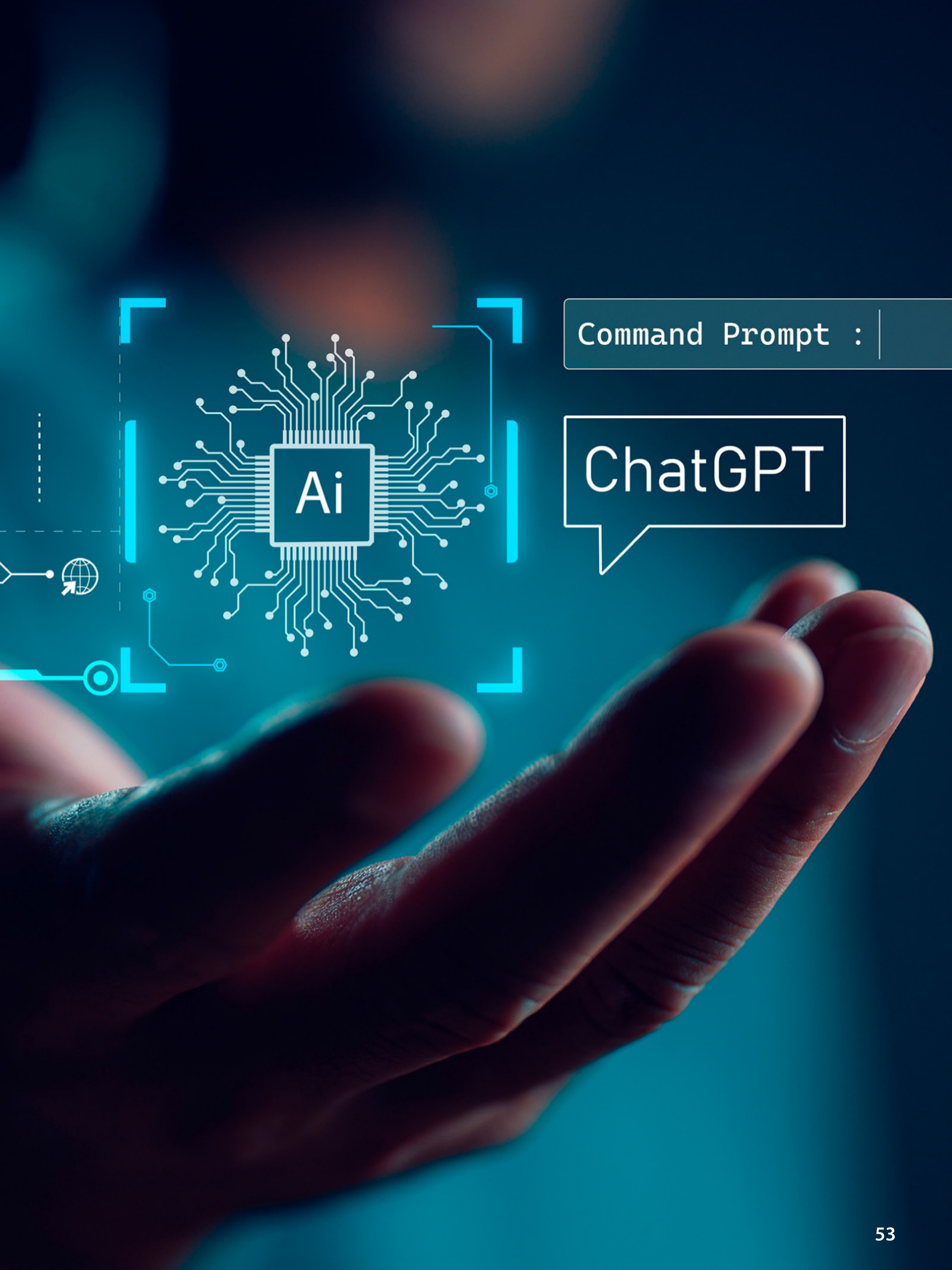

Command Prompt :
Ai
ChatGPT

Copilot
Your everyday AI compani

Image: Alastair Grant

Perplexity advises using "everyday, natural language." Phind says it's best to ask "full and detailed questions" that start with, say, "what is" or "how to."

If you're not satisfied with an answer, some sites let you ask follow up questions to zero in on the information needed. Some give suggested or related questions.

Microsoft's Copilot lets you choose three different chat styles: creative, balanced or precise.

WHAT ARE THE RESULTS LIKE?

Unlike Google search results that throw up a list of links, including sponsored ones, AI chatbots spit out a readable summary of the information, sometimes with a few key links as footnotes. The answers will vary — sometimes widely — depending on the site.

They can shine when you're searching for an obscure factoid, such as, say, a detail about a European Union policy.

Answers from Phind.com were among the most readable and consistently were provided in a narrative form. But the site has mysteriously gone offline at some points.

Testing a simple query — what's the average temperature in London for the second half of February? — produced a similar range of results on most sites: 7-9 degrees Celsius (45-48 Fahrenheit).

Andi strangely provided current weather conditions for New York, though it used the correct city during another try later.

Another search — the names and tenures of the CEOs of British luxury car maker Aston Martin

— is the kind of info available online but needs some work to piece together.

Most sites came up with names from the past decade or two. AskAI provided a list dating to 1947, along with its top three "authoritative sources," but without links.

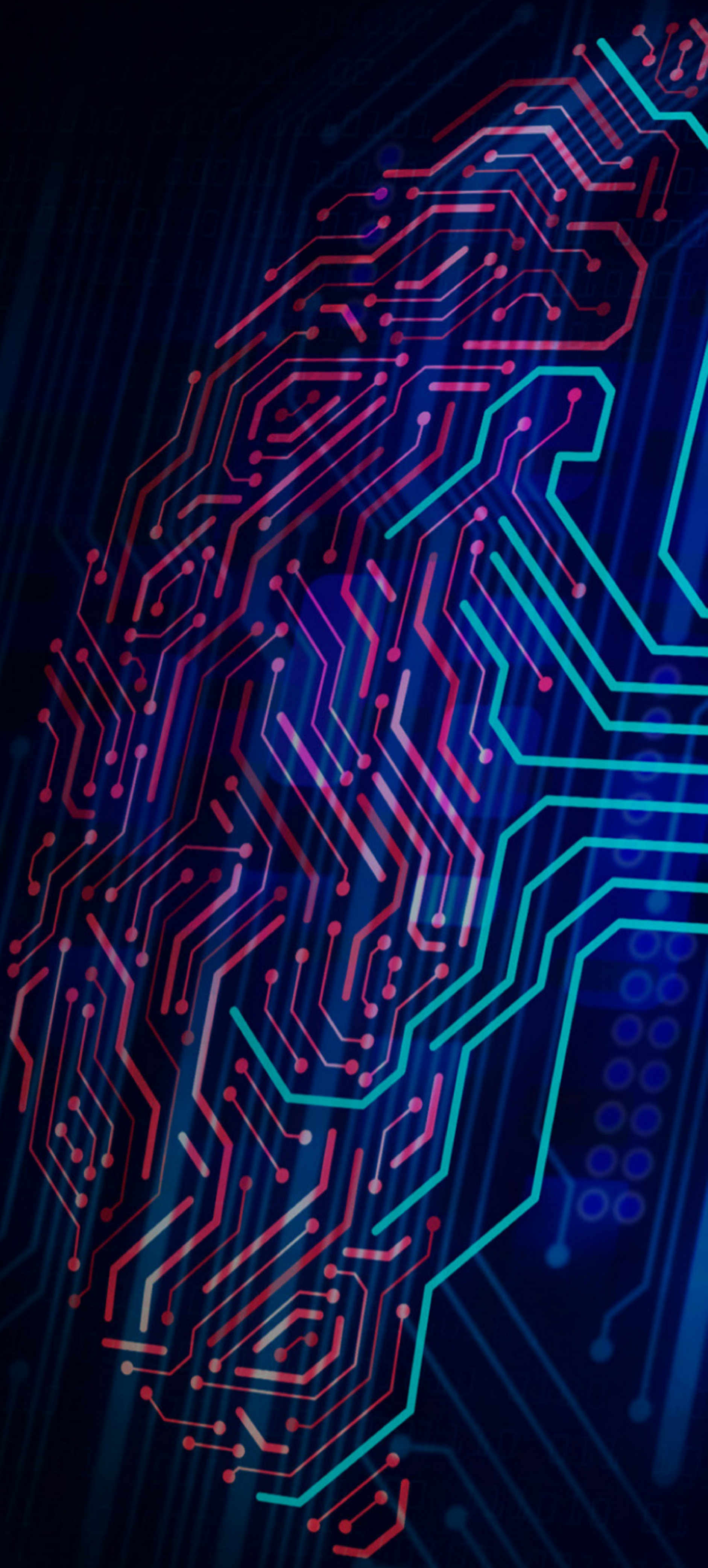
WHAT ARE THE DOWNSIDES?

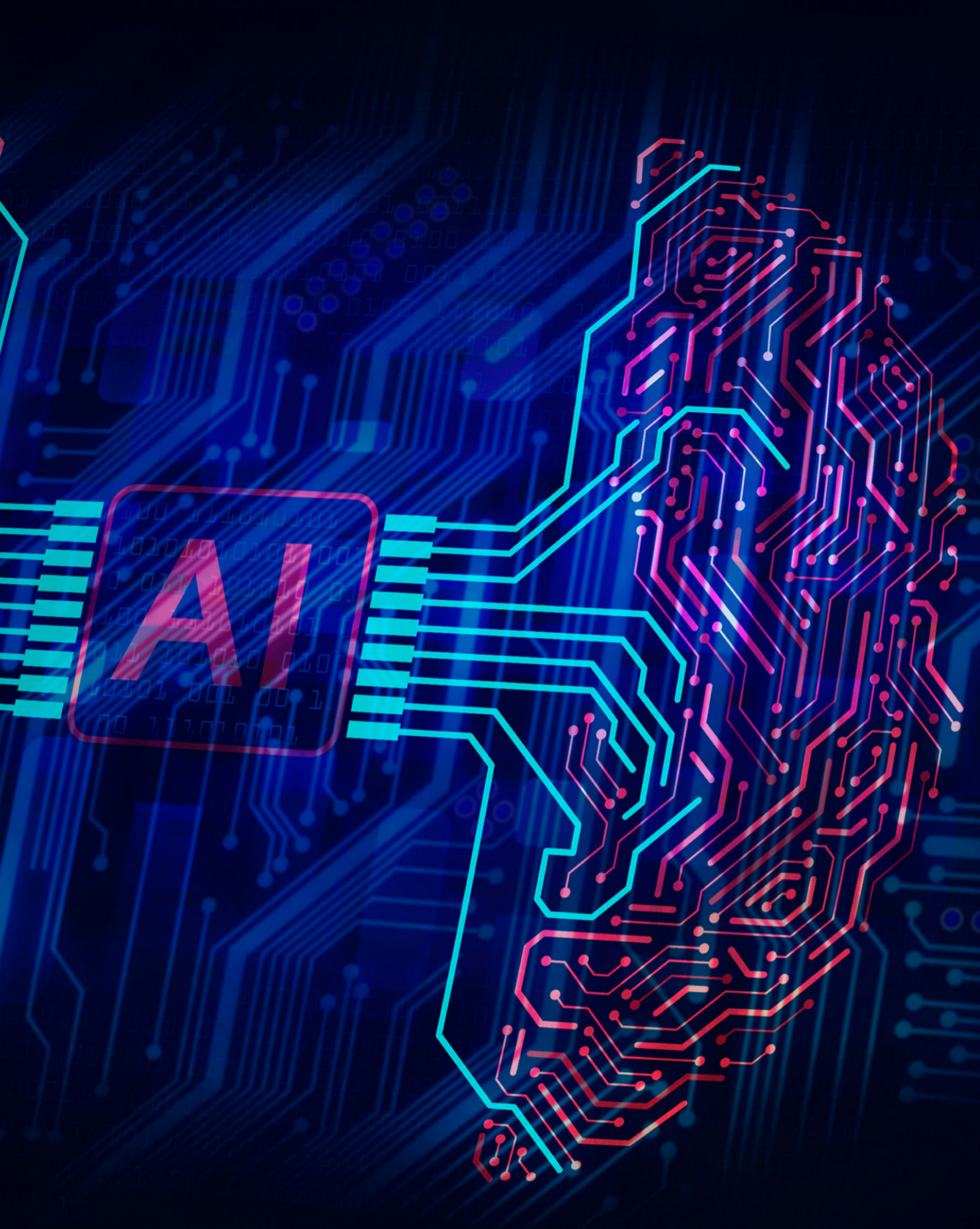
While chatbots may sound authoritative because they produce answers that seem like they're written by a confident human, they're not always correct. AI chatbots have been known for providing deceptively convincing responses, dubbed "hallucinations." HuggingChat warns, "Generated content may be inaccurate or false" and Gemini says it could "display inaccurate info, including about people."

These AI systems scan vast pools of information culled from the web, known as large language models, and then use algorithms to come up with coherent answers, but not all reveal how they arrived at their responses.

Some AI chatbots disclose the models that their algorithms have been trained on. Others provide few or no details. The best advice is to try more than one and compare the results, and always double-check sources.

For example, at one point Komo insisted Canada's population in 1991 was about 1 million people and stood by this wrong number even after I followed up to ask if it was sure. It cited a Wikipedia page, which revealed the figure came from a table for the country's indigenous population. It found the correct number when I tried again later.





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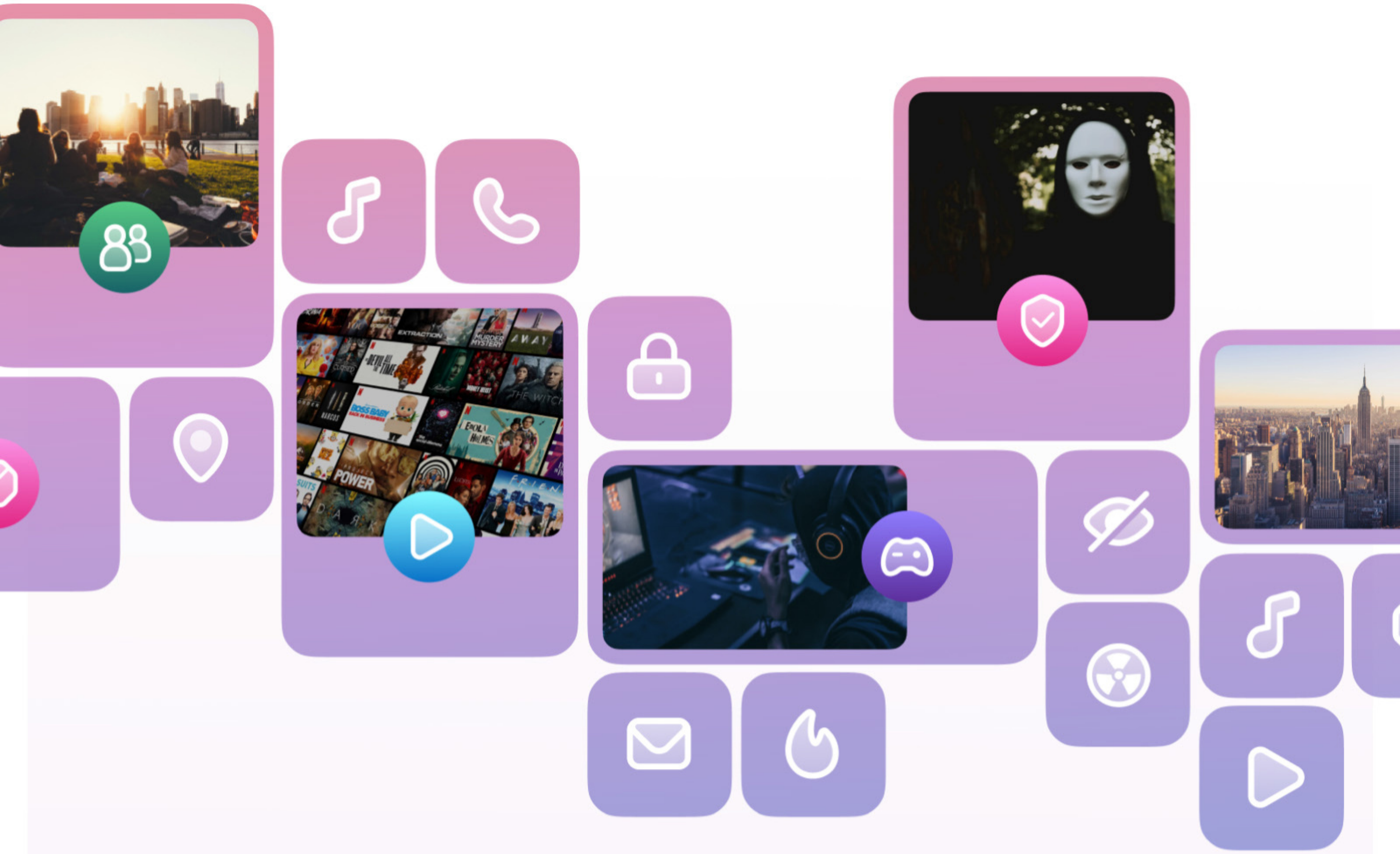

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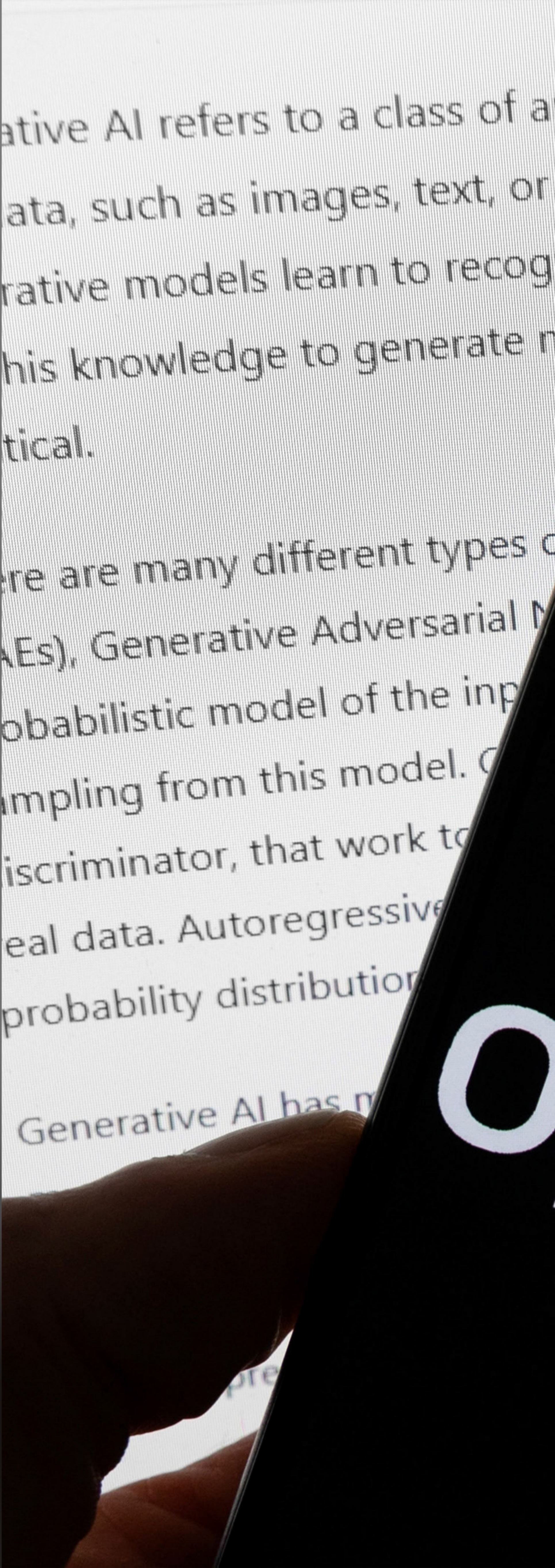
SORA IS CHATGPT MAKER OPENAI'S NEW TEXT-TO-VIDEO GENERATOR. HERE'S WHAT WE KNOW ABOUT THE NEW TOOL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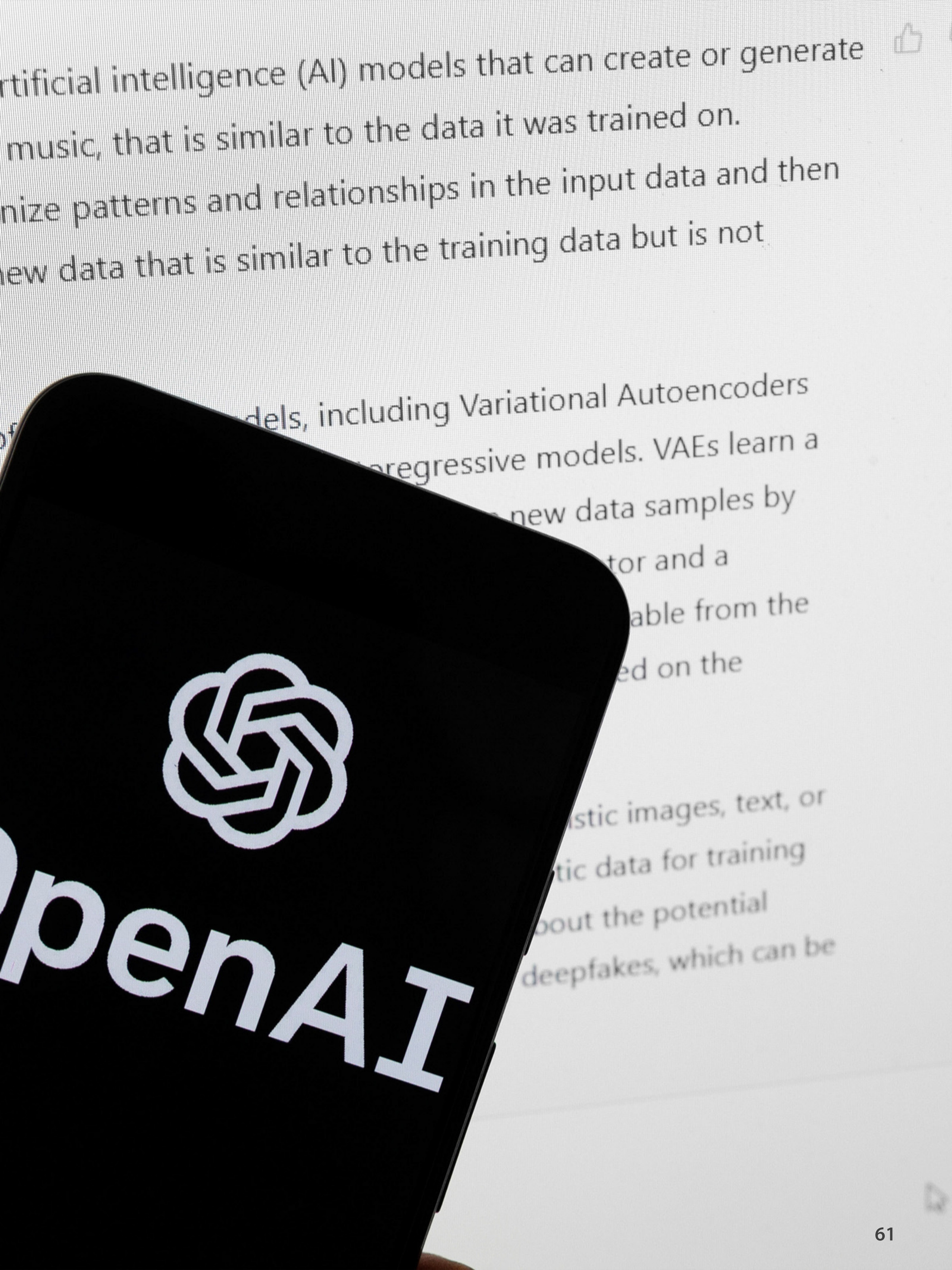
The maker of ChatGPT is now diving into AI-generated video.

Meet Sora — OpenAI's new text-to-video generator. The tool, which the San Francisco company unveiled, uses generative artificial intelligence to instantly create short videos based on written commands.

Sora isn't the first to demonstrate this kind of technology. But industry analysts point to the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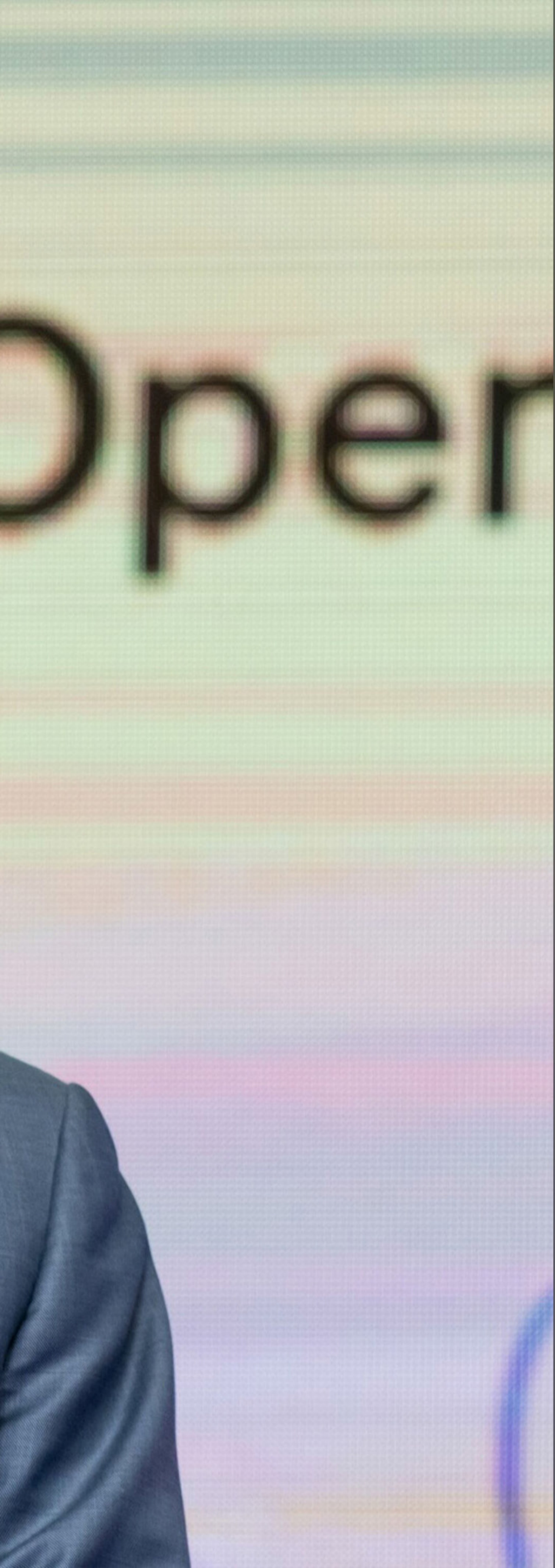

high quality of the tool's videos displayed so far, and note that its introduction marks a significant leap for both OpenAI and the future of text-to-video generation overall.

Still, as with all things in the rapidly growing AI space today, such technology also raises fears about potential ethical and societal implications. Here's what you need to know.

WHAT IS SORA? CAN I USE IT YET?

Sora is a text-to-video generator — creating videos up to 60 seconds long based on written prompts using generative AI. The model can also generate video from an existing still image.

Generative AI is a branch of AI that can create something new. Examples include chatbots, like OpenAI's ChatGPT, and image-generators such as DALL-E and Midjourney. Getting an AI system to generate videos is newer and more challenging but relies on some of the same technology.

Sora isn't available for public use yet (OpenAI says it's engaging with policymakers and artists before officially releasing the tool) and there's a lot we still don't know. But since the announcement, the company has shared a handful of examples of Sora-generated videos to show off what it can do.

OpenAI CEO Sam Altman also took to X, the platform formerly known as Twitter, to ask social media users to send in prompt ideas. He later shared realistically detailed videos that responded to prompts like "two golden retrievers podcasting on top of a mountain " and "a bicycle race on ocean with different animals as athletes riding the bicycles with drone camera view."

While Sora-generated videos can depict complex, incredibly detailed scenes, OpenAI notes that there are still some weaknesses — including some spatial and cause-and-effect elements. For example, OpenAI adds on its website, "a person might take a bite out of a cookie, but afterward, the cookie may not have a bite mark."

ARE THERE OTHER AI-GENERATED VIDEO TOOLS OUT THERE TODAY?

OpenAI's Sora isn't the first of its kind. Google, Meta and the startup Runway ML are among companies that have demonstrated similar technology.

Still, industry analysts stress the apparent quality and impressive length of Sora videos shared so far. Fred Havemeyer, head of U.S. AI and software research at Macquarie, said that Sora's launch marks a big step forward for the industry.

"Not only can you do longer videos, I understand up to 60 seconds, but also the videos being created look more normal and seem to actually respect physics and the real world more," Havemeyer said. "You're not getting as many 'uncanny valley' videos or fragments on the video feeds that look ... unnatural."

While there has been "tremendous progress" in AI-generated video over the last year — including Stable Video Diffusion's introduction last November — Forrester senior analyst Rowan Curran said such videos have required more "stitching together" for character and scene consistency.

.com/blog/chatgpt-plus/

OpenAI

Introducing C

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conversational AI that can chat with yo
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The consistency and length of Sora's videos, however, represents "new opportunities for creatives to incorporate elements of AI-generated video into more traditional content, and now even to generate full-blown narrative videos from one or a few prompts," Curran told via email.

WHAT ARE THE POTENTIAL RISKS?

Although Sora's abilities have astounded observers since the launch, anxiety over ethical and societal implications of AI-generated video uses also remains.

Havemeyer points to the substantial risks in 2024's potentially fraught election cycle, for example. Having a "potentially magical" way to generate videos that may look and sound realistic presents a number of issues within politics and beyond, he added — pointing to fraud, propaganda and misinformation concerns.

"The negative externalities of generative AI will be a critical topic for debate in 2024," Havemeyer said. "It's a substantial issue that every business and every person will need to face this year."

Tech companies are still calling the shots when it comes to governing AI and its risks as governments around the world work to catch up. In December, the European Union reached a deal on the world's first comprehensive AI rules, but the act won't take effect until two years after final approval.

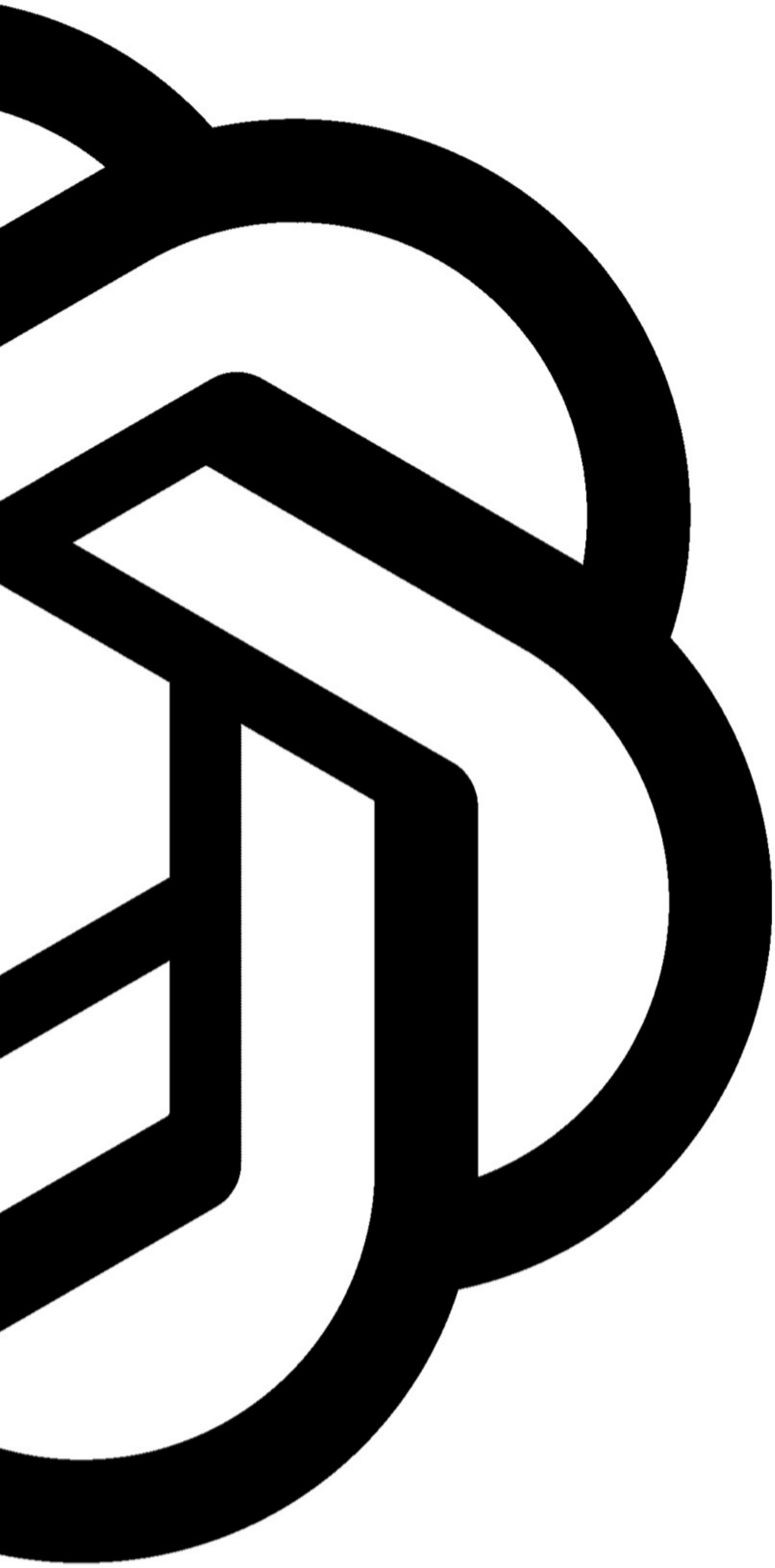
OpenAI said it was taking important safety steps before making Sora widely available.

"We are working with red teamers — domain experts in areas like misinformation, hateful content, and bias — who will be adversarially testing the model," the company wrote. "We're also building tools to help detect misleading content such as a detection classifier that can tell when a video was generated by Sora."

OpenAI's Vice President of Global Affairs Anna Makanju reiterated this when speaking at the Munich Security Conference, where OpenAI and 19 other technology companies pledged to voluntarily work together to combat AI-generated election deepfakes. She noted the company was releasing Sora "in a manner that is quite cautious."

At the same time, OpenAI has revealed limited information about how Sora was built. OpenAI's technical report did not disclose what imagery and video sources were used to train Sora — and the company did not immediately respond to a request for further comment.

The Sora release also arrives amid the backdrop of lawsuits against OpenAI and its business partner Microsoft by some authors and The New York Times over its use of copyrighted works of writing to train ChatGPT. OpenAI pays an undisclosed fee to the AP to license its text news archive.



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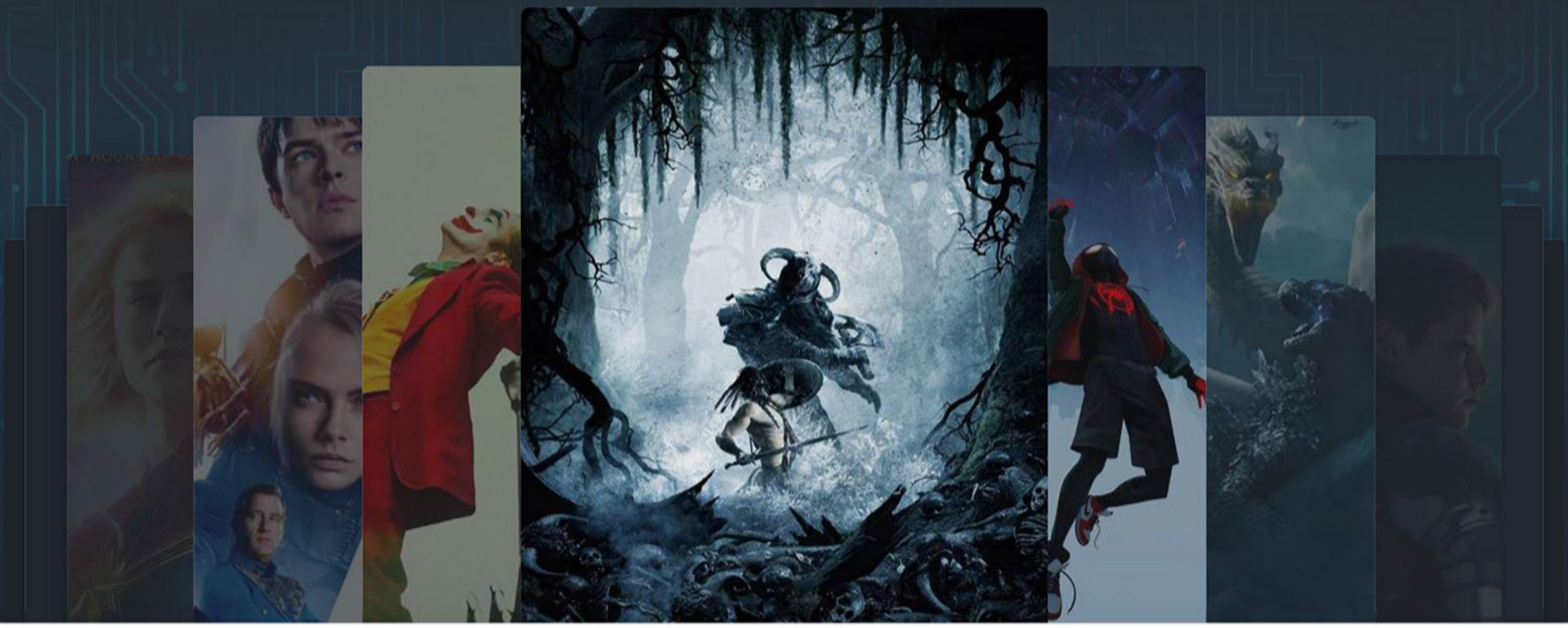

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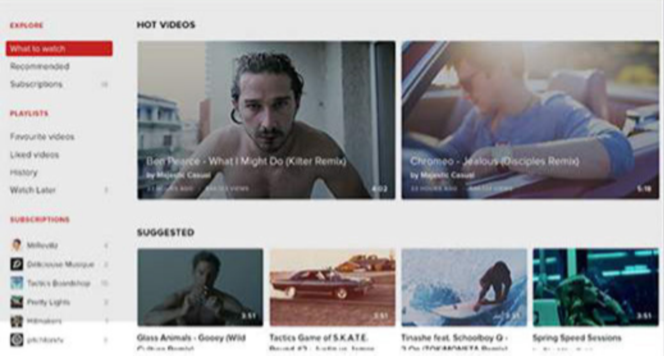

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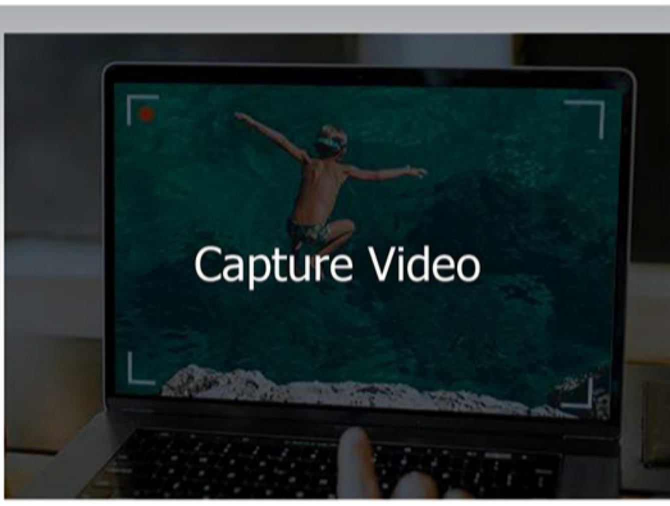

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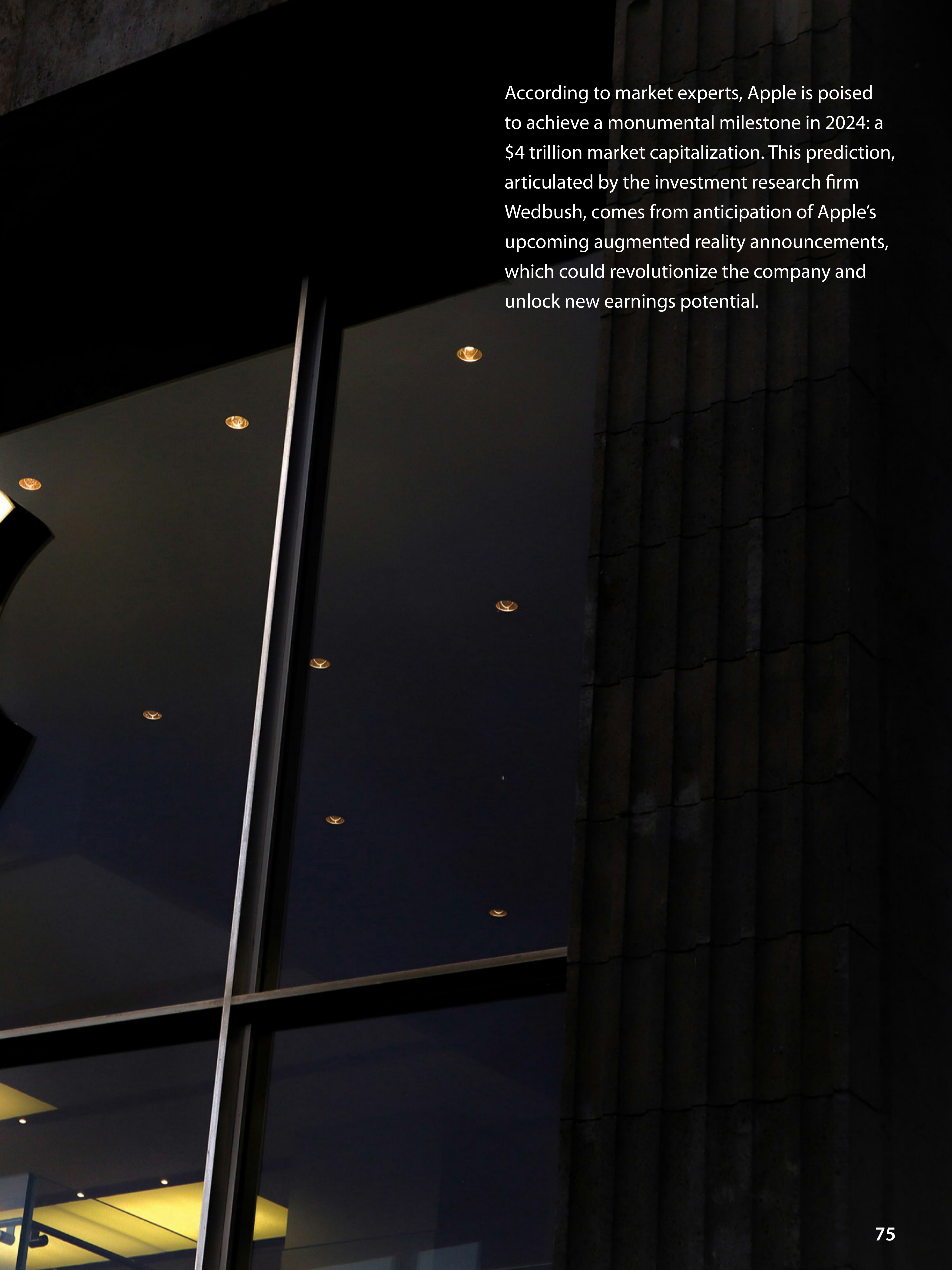
The Next Trillion

APPLE'S UNPRECEDENTED JOURNEY TO A MILESTONE VALUATION

Image: Laurenz Heymann



According to market experts, Apple is poised to achieve a monumental milestone in 2024: a $4 trillion market capitalization. This prediction, articulated by the investment research firm Wedbush, comes from anticipation of Apple's upcoming augmented reality announcements, which could revolutionize the company and unlock new earnings potential.

POWERED BY IPHONE

Central to Apple’s projected valuation surge is the much-anticipated iPhone 16, set to be released in September. Apple’s flagship product has consistently been at the forefront of technology and design innovation, captivating consumers worldwide. **Wedbush predicts the production of 240 million iPhone 15 units in 2024** buoyed by a vigorous upgrade cycle in critical markets such as the United States and China, underscoring the iPhone’s pivotal role in Apple’s growth trajectory and its enduring appeal across diverse consumer segments.

China represents a complex tapestry of opportunity and challenge for Apple. Despite the competitive landscape, marked by formidable local contenders like Huawei, and the intricacies of geopolitical tensions, Apple’s brand strength and product allure are expected to **generate demand for approximately 100 million new iPhones in this market alone.** This optimism reflects Apple’s strategic acumen in navigating the Chinese market’s nuances, reinforcing its global brand presence and market resilience. But the company shouldn’t take anything for granted if it wants to appease shareholders and meet new market expectations. Apple’s growth could be shortlived - sales were nosediving by 13% in the quarter ending in December to $20.8 billion, missing $23.5 billion estimates.

Some hope the upcoming iPhone 16 range could further elevate the company’s market value. It’s expected the iPhone 16 models will feature faster chips, larger sizes for the “Pro” line, camera improvements, and a new

Tuesday, September 12
9:41

Image: Yuheng Ouyang

button, **with suggestions for design changes** afoot for the range. However, Ming-Chi Kuo, a typically well-informed analyst, has suggested that Apple has reduced its internal production targets for iPhones going forward. Although targets remain 200 million units, **this estimate is a 15% decline from 2022** and could mean that Apple may take longer to reach a record market cap, unless it can pull something out of the bag.

SERVICES ON THE RISE

A critical yet often underappreciated facet of Apple's valuation growth is its growing services segment. This division, encompassing Apple Pay, the App Store, and a suite of digital services, is a linchpin in Apple's diversification strategy. With revenue reaching new heights, the **services segment is poised to be valued at up to $1.6 trillion.** This remarkable valuation highlights the segment's strategic importance in deepening consumer engagement, enhancing the ecosystem's stickiness, and driving recurring revenue streams. Apple has made no secret that it wants to generate more from its services arm. Indeed, in 2023, **Apple announced increases to prices** to some confusion and concerns. However, with the benefit of tying people into the Apple ecosystem, the vast majority of consumers are still going to pay for Apple Music, Apple TV+, and Apple Arcade if they already value the services. The **company hiked the prices of most of its services by around $5 in the period**, and we'll see the effect of those price hikes in upcoming earnings calls.

SUPER BOWL LVIII
Music
HALFTIME SHOW

LVIII

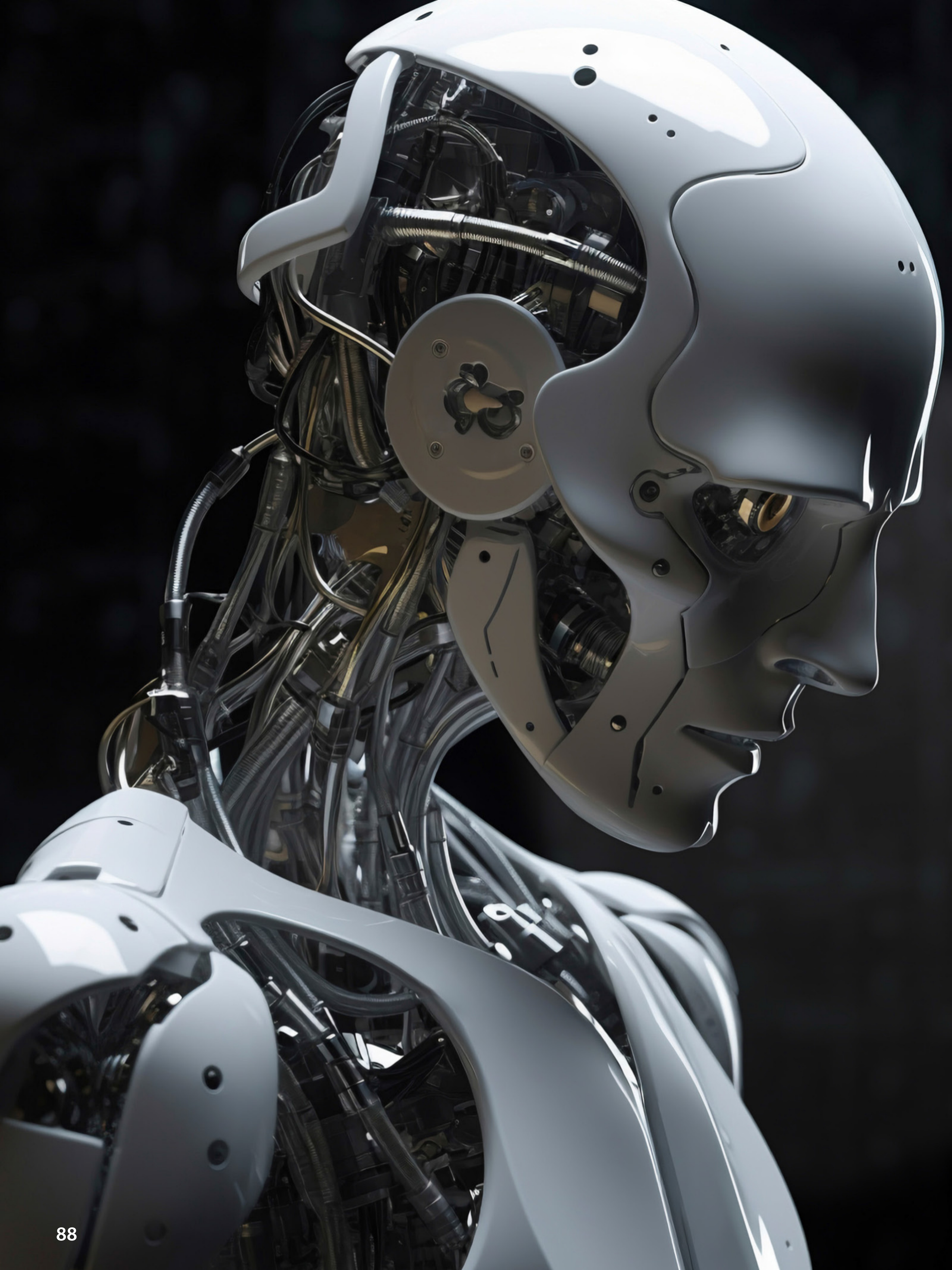
Hold Near Reader
2009

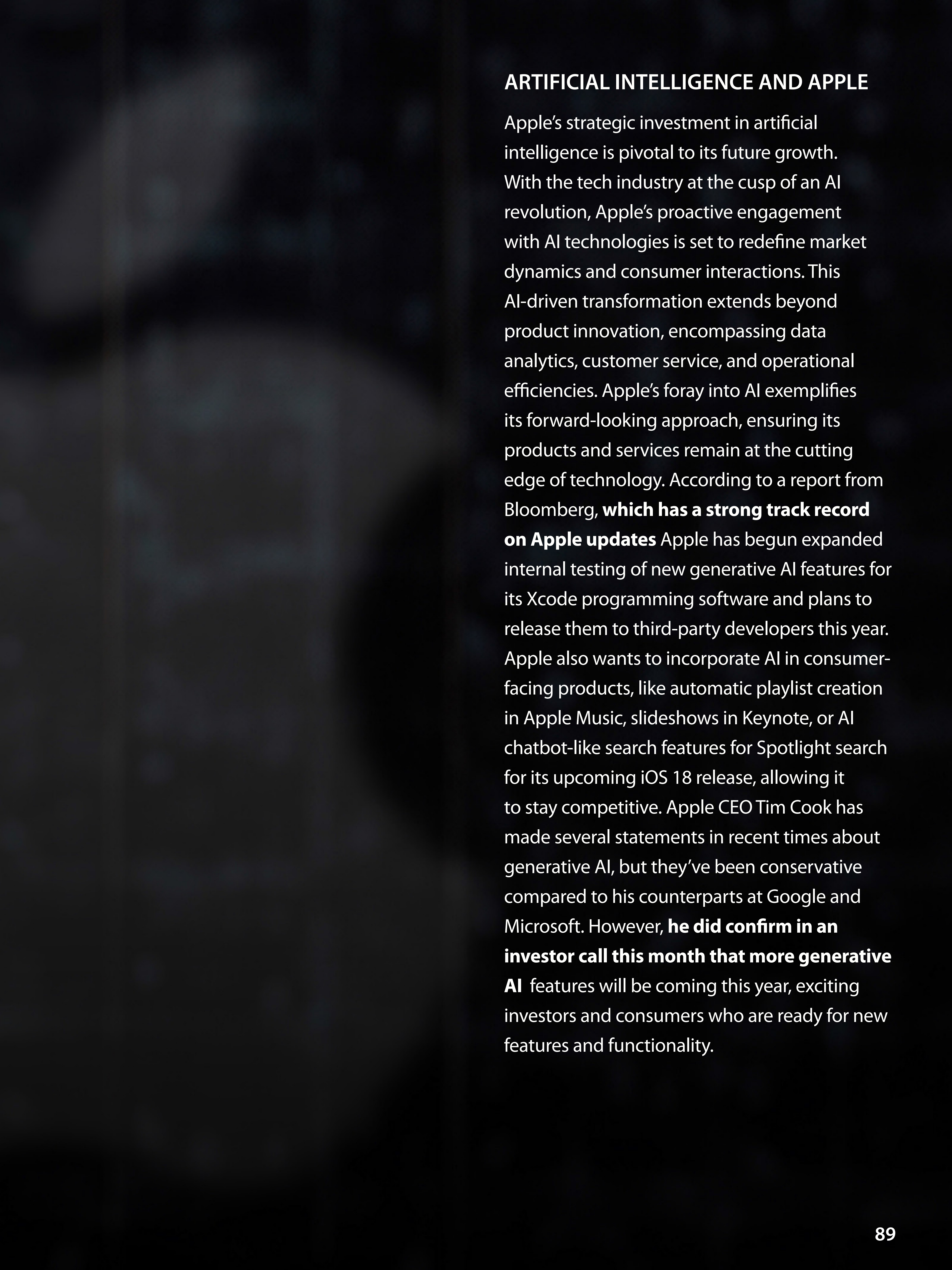
Image: CardMapr

Industry stalwarts, including CNBC's Jim Cramer, share the optimism surrounding Apple's valuation. Cramer's endorsement of Wedbush's analysis lends further credibility to the bullish outlook on Apple. Highlighting the company's strategic positioning and innovative prowess, Cramer underscores the potential underestimation of Apple's services segment, suggesting even more significant growth potential. He said of the news: "They look at how Apple seems static with just incremental growth. I look at it as an ecosystem of two billion active devices, all of which are candidates to upgrade to the latest and greatest models for all of the company's offerings," adding: "Until these analysts understand that there are eight billion people in this world and every one of them may end up being an Apple customer, one way or another, with the lifetime value of each customer potentially worth thousands of dollars on average, then they'll never get why Apple's a winner. But that's great for you and me because it means you'll keep getting opportunities to buy this **ultra-high-quality company into weakness, so you, too, can own Apple, not trade it."** Apple's trajectory towards a $4 trillion market cap represents a confluence of opportunity, innovation, and strategic growth for investors. The company's comprehensive product ecosystem and expanding services portfolio present a compelling value proposition. Apple's ability to sustain innovation, navigate market dynamics, and capitalize on emerging trends, such as AI, positions it as a formidable contender in the global tech arena - and those who choose to invest could be a winner in no time.

Image: Chris Nagahama

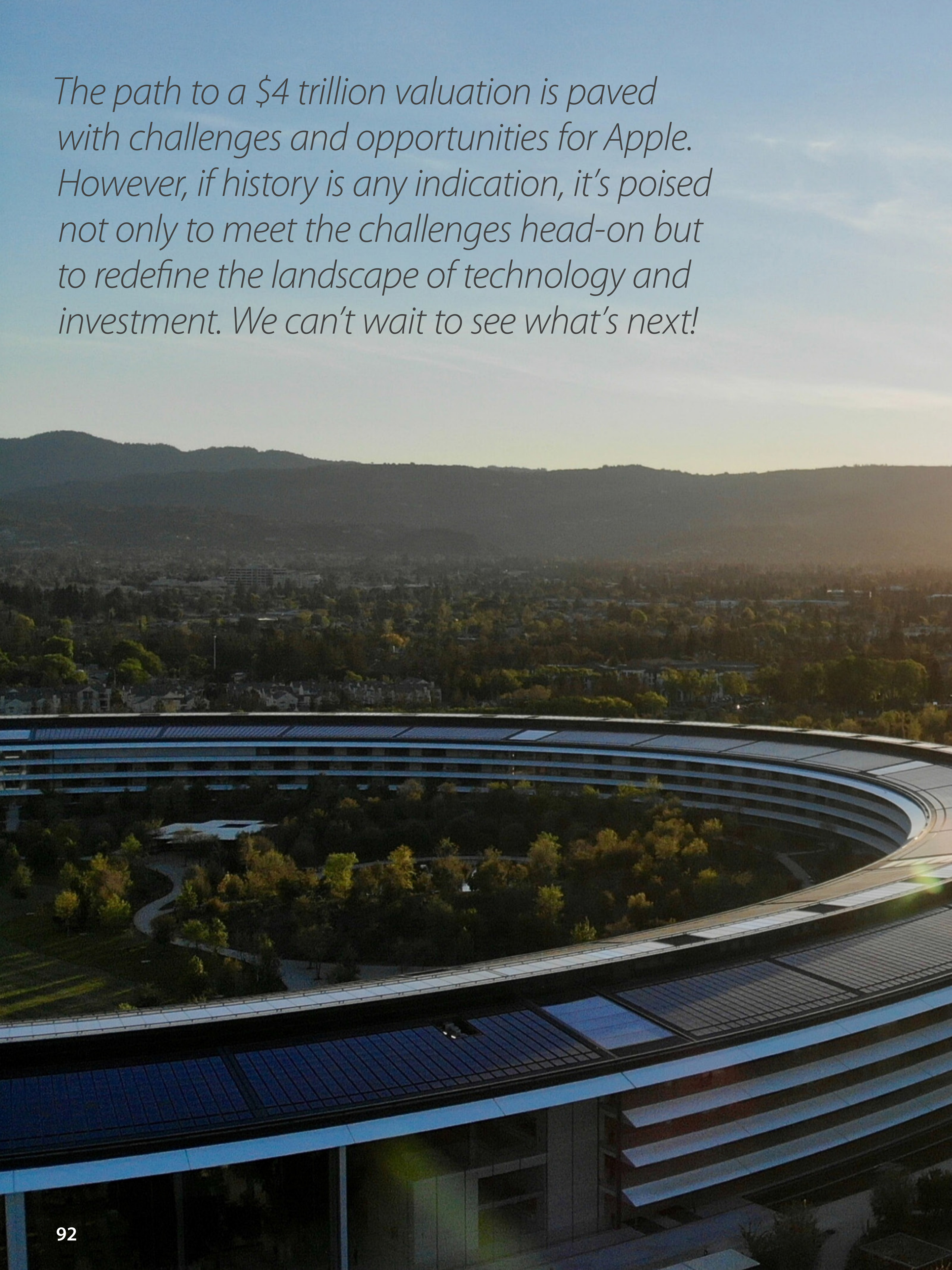
Image: Yuheng Ouyang





ARTIFICIAL INTELLIGENCE AND APPLE

Apple's strategic investment in artificial intelligence is pivotal to its future growth. With the tech industry at the cusp of an AI revolution, Apple's proactive engagement with AI technologies is set to redefine market dynamics and consumer interactions. This AI-driven transformation extends beyond product innovation, encompassing data analytics, customer service, and operational efficiencies. Apple's foray into AI exemplifies its forward-looking approach, ensuring its products and services remain at the cutting edge of technology. According to a report from Bloomberg, **which has a strong track record on Apple updates** Apple has begun expanded internal testing of new generative AI features for its Xcode programming software and plans to release them to third-party developers this year. Apple also wants to incorporate AI in consumer-facing products, like automatic playlist creation in Apple Music, slideshows in Keynote, or AI chatbot-like search features for Spotlight search for its upcoming iOS 18 release, allowing it to stay competitive. Apple CEO Tim Cook has made several statements in recent times about generative AI, but they've been conservative compared to his counterparts at Google and Microsoft. However, **he did confirm in an investor call this month that more generative AI** features will be coming this year, exciting investors and consumers who are ready for new features and functionality.



The path to a $4 trillion valuation is paved with challenges and opportunities for Apple. However, if history is any indication, it's poised not only to meet the challenges head-on but to redefine the landscape of technology and investment. We can't wait to see what's next!

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Image: Peter Kramer

EX-YAHOO CEO MARISSA MAYER DISCUSSES THE CURRENT TECH SCENE FROM VANTAGE POINT OF HER AI STARTUP

Marissa Mayer has long been an inspiration for innovative women battling to break through the gender barriers in a male-dominated technology industry.

After graduating from Stanford University, Mayer joined Google in 1999 when the internet search giant was still a startup and then went on to design breakthrough products such as Gmail. She left Google in 2012 to become CEO of Yahoo in an unsuccessful effort to turn around the fading internet pioneer. But Mayer still managed to triple Yahoo's stock price and create more than $30 billion in shareholder wealth before selling company's online operations to Verizon Communications in 2017.

Mayer, 48, now runs an artificial intelligence startup called Sunshine with Enrique Muñoz Torres — a former colleague at Google and Yahoo — from a Palo Alto, California, office that served as Facebook's first headquarters in Silicon Valley. She recently sat down for an interview.

Q: SUNSHINE IS USING AI TO MANAGE CONTACTS ON A MOBILE APP. ISN'T THAT A RELATIVELY SIMPLE TASK FOR A SOPHISTICATED TECHNOLOGY?

A: Our thesis for the company is there are just a lot of mundane tasks that just get in the way. It's true for a lot of things: contacts, calendaring, scheduling, all those different components take a lot of friction. We think by applying AI – not even necessarily in cutting edge ways — you can both solve valuable problems and you can give people back time. You can also build their confidence in AI.

Q: SO HOW DOES THE SUNSHINE APP WORK AND SINCE IT'S FREE, HOW ARE YOU GOING TO MAKE MONEY?

A: After you install it on your iPhone or your Android phone, we look at your contacts. Then you can hook it up to your email and we go through to see if we can recognize the signature blocks and who you correspond with many times back and forth. If it looks like you are actually engaging in conversations, we will add that person to your contacts. If you like the way we are handling your contacts, for a monthly

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fee of $4.99, we can go to places like LinkedIn and add things that you may not have added yourself.

Q: WHAT KINDS OF THINGS DO YOU WORRY ABOUT WITH THE ADVENT OF AI?

A: It is a very powerful technology and whenever you have a powerful technology things can go wrong. The powers are amazing, but they also introduce a whole new level of safety concern. My fears are somewhat different than some of the people who are worried about AI overlords and things like that. Mine is just we are starting to get close to technologies that approximate human intelligence.

When you have got a machine that is almost as intelligent as humans, the odds that humans end up getting fooled that it's real — that it isn't a machine — just gets higher. When you have people who can't tell what's real anymore and what's authentic because the machine intelligence is now approximating the human intelligence, that is really the biggest risk.

Q: HOW DO YOU THINK THE TECH INDUSTRY IS DOING IN TERMS OF HIRING AND PROMOTING WOMEN IN LEADERSHIP ROLES?

A: There have been steps forward and steps back. I think the representation of women in leadership at the VP (vice president) and director level is getting better across companies. So, it feels like things are improving. Probably not as fast as I would like, but there have been steps in the right direction.

YAH

oo!

Q: NOT LONG AFTER YOU BECAME YAHOO CEO, YOU ORDERED A LOT OF EMPLOYEES WHO WERE WORKING FROM HOME TO START COMING INTO THE OFFICE REGULARLY. HAS THE PANDEMIC RESHAPED YOUR THINKING ABOUT THE WORK IN OFFICE/ AT HOME DYNAMIC?

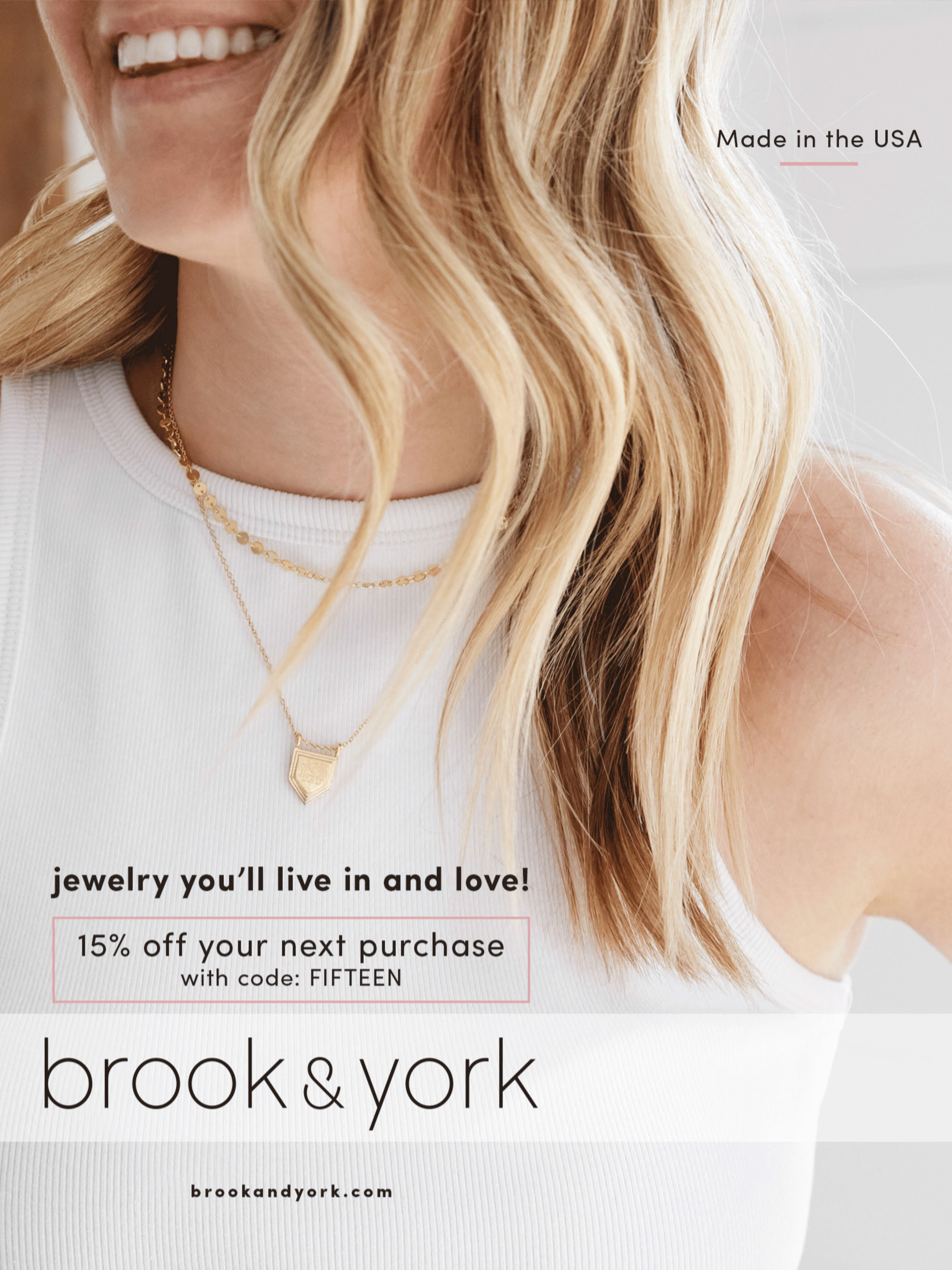
A: I wasn't trying to make a broad statement about work from home policies back then. I was just being blatantly honest. The company was in trouble and had been in trouble for a long time. It was a turnaround. Somewhere on the order of 1% of (Yahoo) employees had official work from home status, but when I got there 10% of the employees were informally working from home whenever they felt like it. And they didn't have a great setup and their productivity showed it.

I think it is really hard to join an organization that is fully remote because that notion of culture gets lost — things like how to grow management, leadership, vision, the ability to align people around a product and plan around what you are trying to build.

Q: DO YOU STILL FOLLOW WHAT IS GOING ON WITH YAHOO?

A: I do follow Yahoo. The old saying there is you bleed purple (the color of the company's old logo) once you have worked there, and I really do. I am really proud of the people who are still there and I am really proud of the people who have left and gone on to do great things across the industry. I still feel very connected to them.

Image: Dita Alangkara



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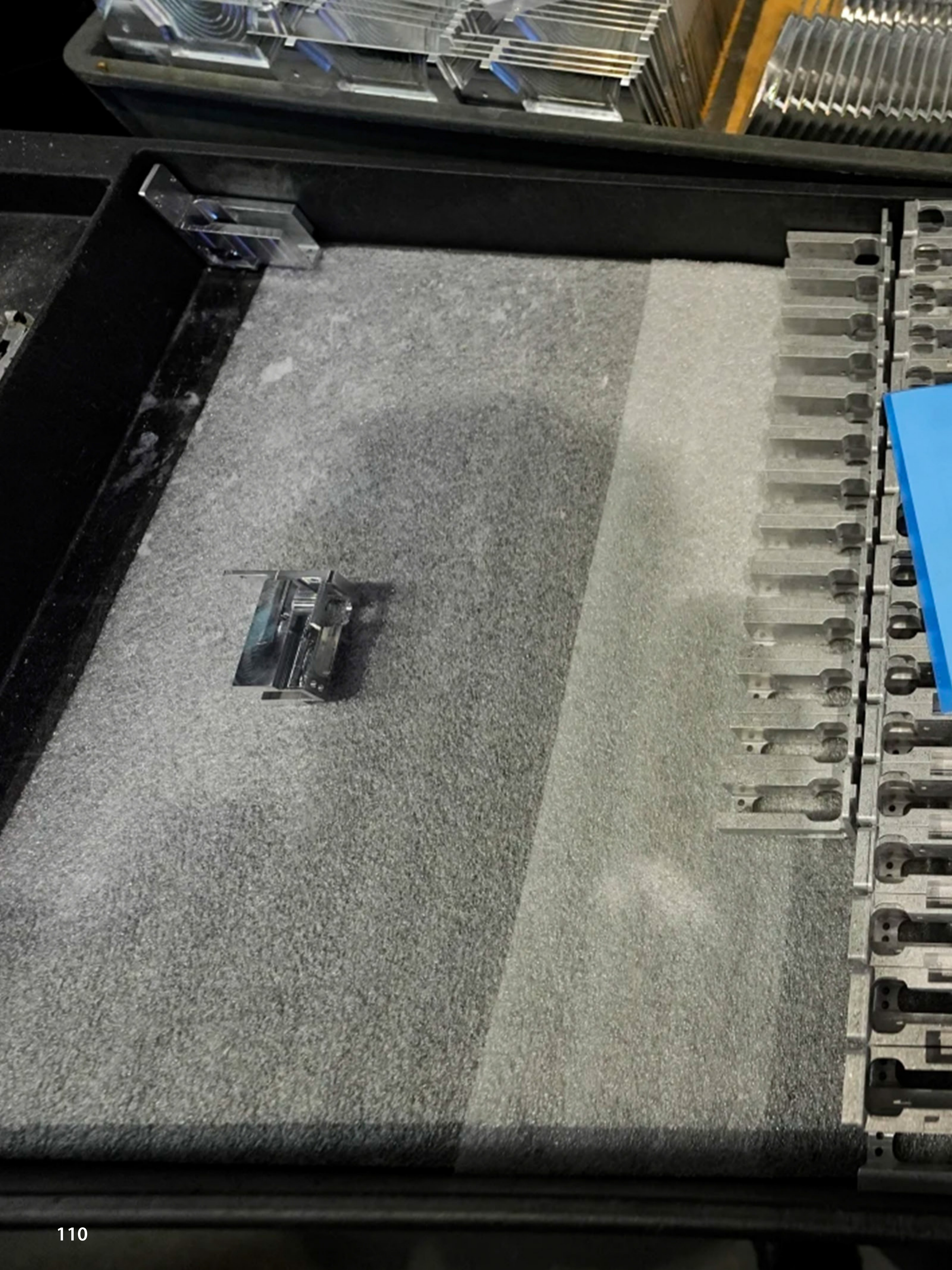
ROBOTS AND HAPPY WORKERS: PRODUCTIVITY SURGE HELPS EXPLAIN US ECONOMY'S SURPRISING RESILIENCE

Trying to keep up with customer demand, Batesville Tool & Die began seeking 70 people to hire last year. It wasn't easy. Attracting factory workers to a community of 7,300 in the Indiana countryside was a tough sell, especially having to compete with big-name manufacturers nearby like Honda and Cummins Engine.

Job seekers were scarce.

"You could count on one hand how many people in the town were unemployed," said Jody Fledderman, the CEO. "It was just crazy."



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Batesville Tool & Die managed to fill just 40 of its vacancies.

Enter the robots. The company invested in machines that could mimic human workers and in vision systems, which helped its robots "see" what they were doing.

The Batesville experience and others like it have been replicated countlessly across the United States for the past couple of years. Chronic worker shortages have led many companies to invest in machines to do some of the work they can't find people to do. They've also been training the workers they do have to use advanced technology so they can produce more with less.

The result has been an unexpected productivity boom, which helps explain a great economic mystery: How has the world's largest economy managed to remain so healthy, with brisk growth and low unemployment, despite brutally high interest rates that are intended to tame inflation but that typically cause a recession?

To economists, strong productivity growth provides an almost magical elixir. When companies roll out more efficient machines or technology, their workers can become more productive: They increase their output per hour. A result is that companies can often boost their profits and raise their employees' pay without having to jack up prices. Inflation can remain in check.

Austan Goolsbee, president of the Federal Reserve Bank of Chicago, has likened surging productivity to "magic beanstalk beans for the economy. ... You can have faster income increases, faster wage growth, faster GDP without generating inflation."

Joe Brusuelas, chief economist at the tax and consulting firm RSM, said, "The last time we saw anything like this was the late 1990s."

That was when a productivity surge — an early payoff from the sudden embrace of laptops, cellphones and the internet — helped allow the Federal Reserve to keep borrowing rates low because inflation remained under control even as the economy and the job market sizzled.

This time, the Fed's aggressive streak of rate hikes — 11 of them starting in March 2022 — has managed to help cool inflation from a four-decade high of 9.1% to 3.1% while causing little economic hardship.

"I would have said it's not possible," said Sal Guatieri, senior economist at BMO Capital Markets. "But that's exactly what happened."

A year ago, nearly every economist was warning that a recession was all but inevitable. Fed Chair Jerome Powell himself warned in 2022 that beating inflation would inflict "some pain" in the form of widespread layoffs and higher unemployment.

By last month, Powell was sounding a different note. With unemployment barely above a half-century low, the Fed chair told reporters, "We've had a very strong labor market, and we've had inflation coming down."

He did caution that the central bank wants to see further progress in slowing inflation. Yet the Fed is so optimistic that inflation is heading toward its 2% goal that it hasn't raised rates since July and is expected to cut rates multiple times this year.

Perhaps the likeliest explanation is the greater efficiencies that companies like Batesville Tool &

Die have managed to achieve in the past year or so. Before productivity began its resurgent growth last year, a rule of thumb was that average hourly pay could rise no more than 3.5% annually for inflation to stay within the Fed's 2% target. That would mean that today's roughly 4% average annual pay growth would have to shrink. Yet higher productivity has changed that equation: There's now more leeway for wage growth to stay elevated without igniting inflation.

"A lot of that pressure on business finances — that normally causes them to raise prices — has been offset by strong productivity growth," Guatieri said.

At a news conference this month, Powell was asked whether he believed higher productivity helps explain why the economy has kept growing steadily even while inflation has tumbled.

"That's one way to look at it — yeah," Powell replied.

The productivity boom marks a sharp shift from the pre-pandemic years, when annual productivity growth averaged around a tepid 1.5%, according RSM's calculations. Everything changed as the economy rocketed out of the 2020 pandemic recession with unexpected vigor, and businesses struggled to re-hire the many workers they had shed.

The resulting worker shortage sent wages surging. Inflation jumped, too, as factories and ports buckled under the strain of rising consumer orders. Parts shortages arose.

Desperate, many companies turned to automation. Investment in equipment and in research and development and other forms of intellectual property accelerated. The efficiency payoff began to arrive almost a year ago. Labor productivity rose at a 3.6% annual pace from last April through June, 4.9% from July through September and 3.2% from October through December.

At Reata Engineering & Machine Works, "efficiency was kind of forced on us," CEO Grady Cope said. With the job market roaring, the company, based in Englewood, Colorado, couldn't hire fast enough. Meantime, its customers were starting to balk at paying higher prices.

So Reata installed robots and other technology to produce more with less. Software allowed it to automate the delivery of price quotes to customers. That process used to require two weeks. Now, it can be done in 24 hours.

Many economists and business people say they're hopeful, if not certain, that the productivity boom can continue. Artificial intelligence, they note, is only beginning to penetrate factory floors, warehouses, stores and offices.

"Right now, AI is not a critical enabler for us; it's an assistant and accelerator in certain roles," said Peter Doyle, CEO of Hirsh Precision, which makes parts for the aerospace and medical device industries. "The world is still trying to understand what AI is capable of doing and how quickly it will advance."

The early evidence suggests that AI could sustain the productivity gains. A study last year by Erik Brynjolfsson of Stanford University and Danielle Li and Lindsey Raymond of the Massachusetts Institute of Technology tracked 5,200 customer-support agents at a Fortune 500 company who used a generative AI-based assistant in 2020 and 2021. The AI tool provided suggestions for dealing with customers and links to useful internal documents.

SMOOTH TECHNOLOGY
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Those using the chatbot were found to be 14% more productive than colleagues who didn't use the tool. They handled more calls and completed them faster. The biggest gains in productivity — 34% — came from the least-experienced, least-skilled workers.

Automation tends to raise fears that machines will replace human workers and thereby kill jobs. Some workers supplanted by robots do often struggle to find new work and end up settling for lower pay.

Yet history suggests that in the long run, technological improvements actually create more jobs than they destroy. People are needed to build, upgrade, repair and operate sophisticated machines. Some displaced workers are trained to shift into such jobs. And that transition is likely to be eased this time by the retirement of the vast baby boom generation, which is causing labor shortages.

Some of today's productivity gains may be coming not just from advanced technology but also from more satisfied workers. The tight labor markets of the past three years allowed Americans to change jobs and find others that pay better and make them happier and more productive.

One of them was Justin Thompson, of Kalamazoo, Michigan, who had felt burned out by his job as a police officer, with its 16-hour workdays.

"I was literally running myself into the ground," he said.

Thompson's wife saw a job posting for operations manager at a charter airline. Even without airline experience, his wife felt he could use skills he gains as a Marine Corps infantryman — handling logistics for missions — during tours in Iraq and Afghanistan.

She was right. Omni Air International hired him in 2019.

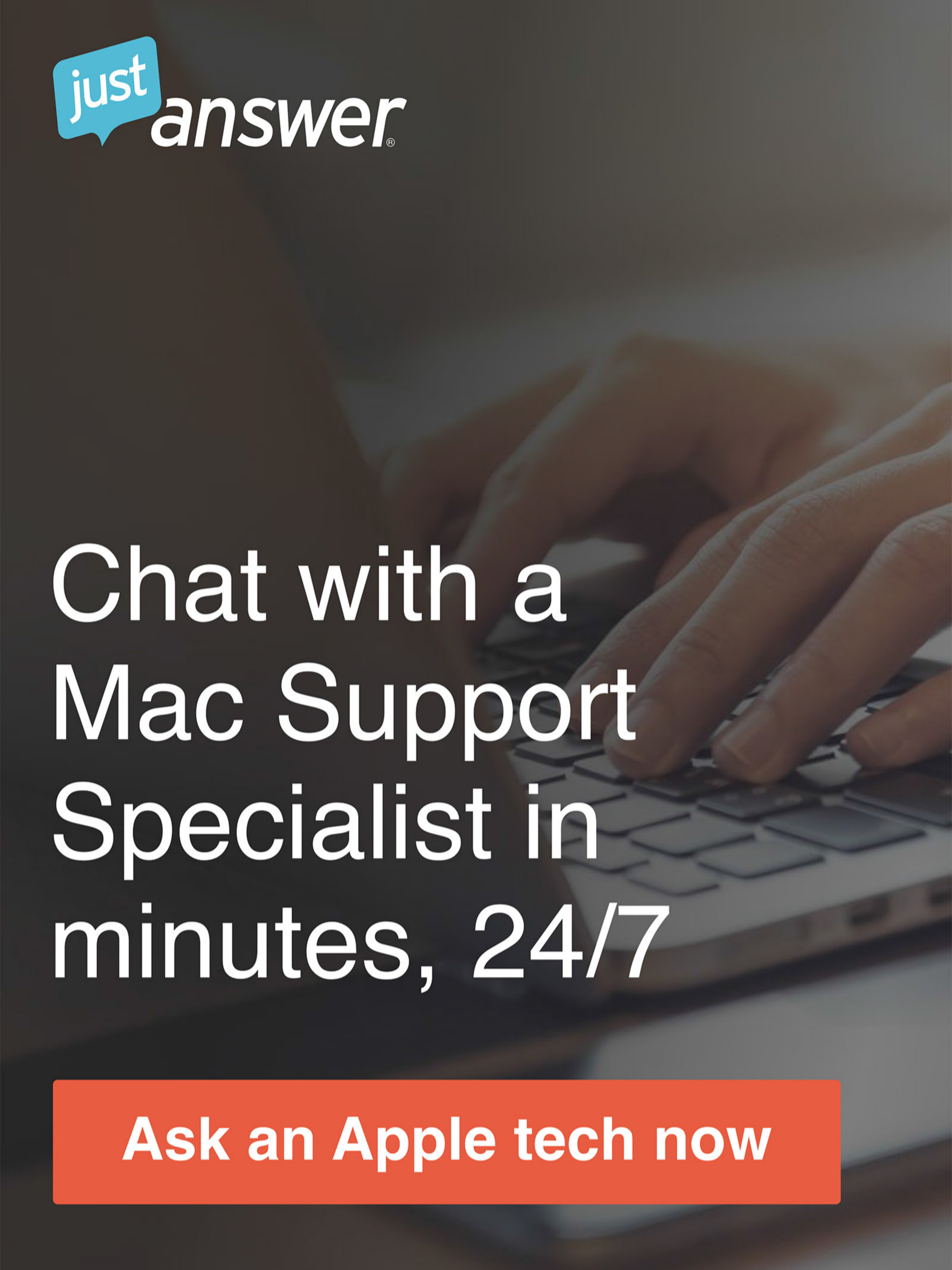
Thompson, 43, said he he loves the new job, which allows him to work from home when he's not traveling. And his Marine experience — which included developing ways to improve efficiency — has proved invaluable. Technology helps, too: Thompson travels with a laptop, iPad and mobile printer and uses proprietary software to manage logistics.

Other workers have switched from low-skill jobs to those that pay better and are more productive.

“The people who were rolling tacos on Dec. 31, 2019 ... yeah, they've moved up,” RSM's Brusuelas said. “They're doing other things and making a lot more money.”

At Reata Engineering, staffers were trained to use new sophisticated equipment. One 19-year-old employee, a university engineering student, has used AI tools to make company training materials less cumbersome and time-consuming.

“The whole point is not to lay people off,” said Cope, the CEO of Reata Engineering. “The point is to make people do jobs that are more interesting” — and pay better, too.



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5 THINGS YOU NEED TO KNOW BEFORE BUYING A USED EV

share.

Buying any car is complicated. Want to make it even more complicated? Consider buying a used electric vehicle.

There are good reasons to consider a used electric vehicle. Perhaps you want an EV as an additional household vehicle — for your teenager who just started to drive, perhaps — or as a replacement for a vehicle you already own. But there are additional aspects about buying an EV that you'll need to consider in order to get the best value. The car experts have put together five tips on what you need to know.

RESEARCH THE POSSIBLE FUEL COST SAVINGS

An EV typically costs less to charge and drive than paying to fill up the tank of a gas- or diesel-powered car. That can help you save money in your monthly fuel bills. But you'll need to crunch some numbers to find out how much.

The EPA's fueleconomy.gov website is a helpful resource for comparing the efficiency and annual fuel costs of different vehicles. Make sure to enter personalized information about how much you'll be paying for electricity. Unlike the relatively stable pricing of gasoline, electricity costs vary widely depending on where you live and how you charge.

CERTAIN USED EVS QUALIFY FOR A TAX CREDIT

Starting in January 2023, the IRS revised its policy on EV tax credits on used vehicles purchased for $25,000 or less. Eligible vehicles qualify for a tax credit of 30% of the purchase price up to a maximum of $4,000. There are

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many caveats, but the eligible vehicles list is quite generous.

Perhaps the biggest limitations are that you must buy from a licensed dealer and the vehicle must be a model year at least two years earlier than the calendar year when it is purchased. You can learn more from the IRS' Used Clean Vehicle Credit page and the EPA's search function for eligible vehicles.

USED EVS WILL HAVE LESS RANGE THAN WHEN NEW

The federal government requires EV manufacturers to warranty their batteries for eight years or 100,000 miles. That means battery life is a consideration, but it's probably not the biggest one. An analysis of 6,300 EVs by the fleet-tracking firm Geotab concluded that the rate of battery degradation of the EVs it tracked was slower than the usable life of the vehicle. The average rate of decline in Geotab's tracked vehicles was 2.3% per year.

This is something to consider, especially as many used EVs didn't have a bunch of range to begin with. For example, at the 2.3% degradation rate, a 2020 Hyundai Ioniq EV that had a 170-mile maximum range when new might be down to 150 miles after five years. Ambient temperature, climate control use, driving style and terrain greatly influence range as well.

BUT THAT RANGE CAN STILL BE ENOUGH

According to the Federal Highway Administration, Americans drive about 37 miles daily on average. That's well below the maximum range of EVs. But if that's all we did, EVs would make sense for everyone. Only you can know how many miles you need to drive daily, or what you want an EV to be capable of doing.

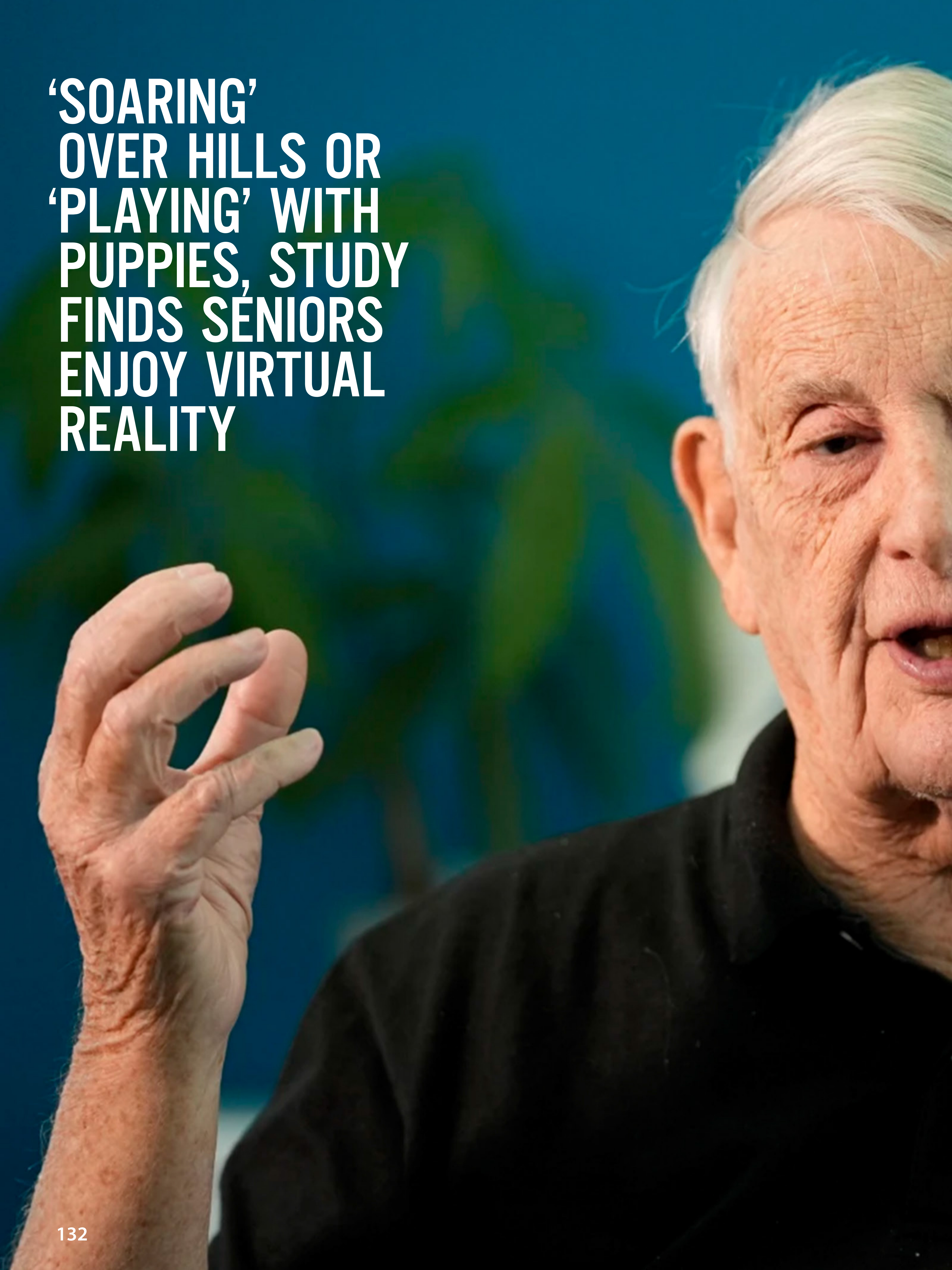
A used EV can be a great addition to a household that already owns another vehicle. Many families buy an EV to use as a daily commuter if they have another vehicle that will work when longer range is needed. That strategy saves money on energy costs and may allow them to buy a less costly EV with a shorter range.

FACTOR IN THE COST OF HOME CHARGING INSTALLATION

Owning an EV is the easiest when you can charge it at home. Charge times are dependent on many factors, but we recommend getting a home 240-volt charging setup. It's a lot quicker and convenient than trying to charge an EV with a regular 120-volt power cord or relying on public charging stations. A new home charger — these devices are formally known as electric vehicle supply equipment, or EVSE — typically cost $200 to $600 and require 240-volt wiring or an equivalent power outlet. If your garage lacks a 240-volt power source, you'll need to factor in the possible installation costs as well.

Few car purchases are made purely on logic, but thinking through the factors here will guide you to a more informed decision about buying a used EV.

‘SOARING’ OVER HILLS OR ‘PLAYING’ WITH PUPPIES, STUDY FINDS SENIORS ENJOY VIRTUAL REALITY



U.S. ARMY
RETIRED

Retired Army Col. Farrell Patrick taught computer science at West Point during the 1970s and then at two private universities through the 1990s, so he isn't surprised by the progress technology has made over the decades.

But when the 91-year-old got his first virtual reality experience recently, he was stunned. Sitting in a conference room at John Knox Village, a suburban Fort Lauderdale, Florida, retirement community, Patrick sat up straight as his eyes and ears experienced what it would be like to be in a Navy fighter jet flying off the Florida coast.

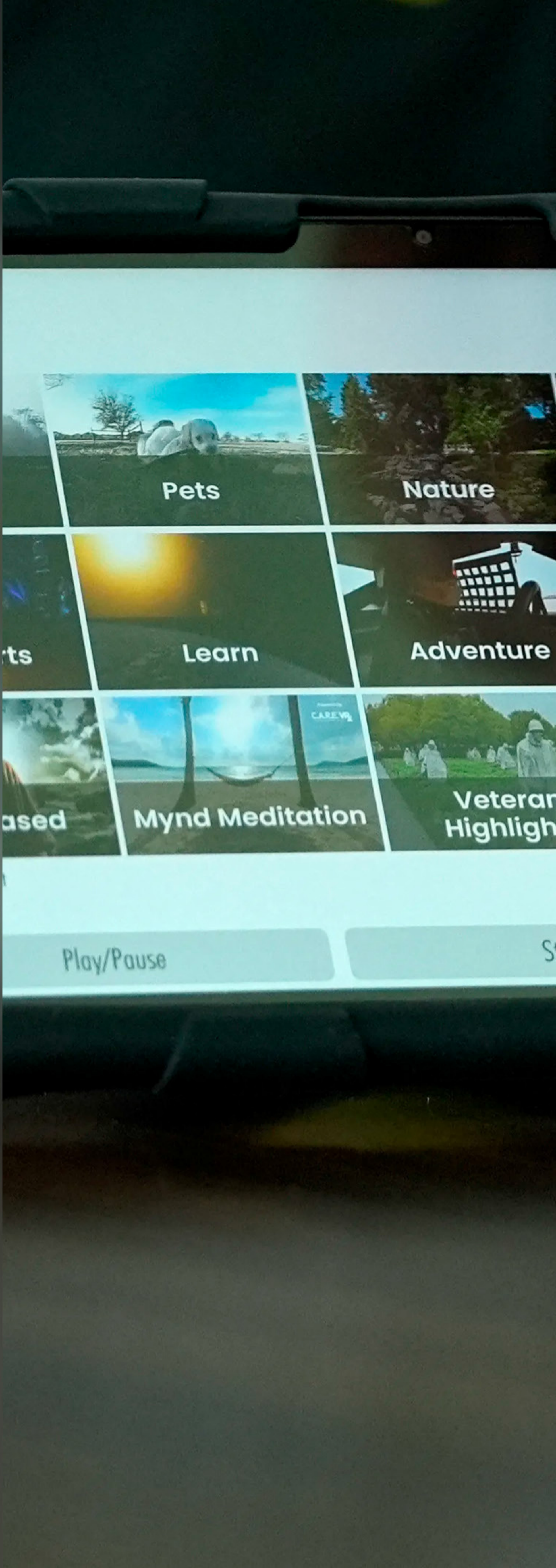
"Oh my God, that's beautiful," he blurted before the VR program brought the jet in for a landing on an aircraft carrier.

John Knox Village was one of 17 senior communities around the country that participated in a recently published Stanford University study that found that large majorities of 245 participants between 65 and 103 years old enjoyed virtual reality, improving both their emotions and their interactions with staff.

The study is part of a larger effort to adapt VR so it can be beneficial to seniors' health and emotional well-being and help lessen the impact dementia has on some of them.

During the testing, seniors picked from seven-minute virtual experiences such as parachuting, riding in a tank, watching stage performances, playing with puppies and kittens or visiting places like Paris or Egypt. The participants wore headsets that gave them 360-degree views and sounds, making it seem like they had been all but dropped into the actual experience.

"It brought back memories of my travels and ... brought back memories of my experience



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growing up on a farm," said Terry Colli, a former public relations director at the Canadian Embassy in Washington, D.C., of his 2022 experience. Colli, 76, liked swiveling in a chair to get a panoramic view. "That was kind of amazing."

Anne Selby, a 79-year-old retired counselor and artist, found VR "stimulated virtually every area of my brain, all of the senses."

"I particularly enjoyed the ones dealing with pets because I have a cat and I've had pets most of my life," she said.

Stanford's peer-reviewed study, working with the company Mynd Immersive, found that almost 80% of seniors reported having a more positive attitude after their VR session and almost 60% said they felt less isolated socially. The enjoyment lessened somewhat for older respondents whose sight and hearing had deteriorated. Those who found VR less enjoyable were also more likely to dislike technology in general.

In addition, almost 75% of caregivers said residents' moods improved after using VR. More than 80% of residents and almost 95% caregivers said talking about their VR experience enhanced their relationships with each other.

"For the majority of our respondents, it was their first time using virtual reality. They enjoyed it. They were likely to recommend it to others, and they looked forward to doing it again," said Ryan Moore, a Stanford doctoral candidate who helped lead the research.

"We are proving VR to be a tool that really does help with the well-being of our elders," said Chris Brickler, Mynd's CEO and co-founder. The Texas-based company is one of a handful that specializes

in virtual reality for seniors. "It is far different than a two-dimensional television or an iPad."

Separate from the study, John Knox Village uses virtual reality in its unit that houses seniors who have Alzheimer's disease and other dementia. It helps spur memories that lead to conversations with caregivers.

"It is like they come back to life when they tell their story." said Hana Salem, the facility's meaningful life coordinator. She said that with others who don't talk much perk up when given a VR experience putting them in nature.

"They'll start laughing and saying, 'Ooh, I'm going to catch the butterflies,'" Salem said. Catching butterflies is also part of a game Mynd developed that helps seniors enhance their mobility and flexibility as they stand and reach for objects.

"It's more fun for these seniors to come in and catch butterflies and work on shoulder rehab than it is to go pick up a weight," Brickler said.

Brickler said his company's systems will soon attach to Google Earth, so seniors can virtually visit neighborhoods where they lived, schools they attended and places they have visited, sparking further conversations with caregivers.

Such virtual visits "can bring back a tremendous amount of joy, a tremendous amount of memories. And when the therapist or the other caregiver can work with that older adult and talk through things we see, we definitely see that it provides an uplift," Brickler said.

The company has worked on the biggest complaints seniors in the study had about VR — the headsets were too heavy, the heat they generated made their foreheads sweat and

VIVE
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sometimes the experience created nausea, he said. The new headsets weigh about six ounces (189 grams) instead of a pound (454 grams), they have a built-in fan for cooling, and the videos aren't as jumpy.

The findings that seniors in their 80s and 90s enjoy VR less than those in their 70s might lead to changes for them such as requiring less neck rotation to see all of the scenery and making the visuals bigger, Moore said.

On a recent afternoon at John Knox, a handful of seniors who live independently took turns again using virtual reality. Pete Audet experienced what it would be like to fly in a wingsuit, soaring over show-capped mountains before landing in a field.

"Oooh, running stop!" exclaimed Audet, a 76-year-old retired information technology worker. He thinks other seniors "will really enjoy it. But they just need to learn how to use it."

His wife, Karen, "played" with puppies and was so entranced by her virtual walk around Paris that she didn't hear questions being asked of her.

"I was there. But I was here!" said Karen Audet, an 82-year-old retired elementary school teacher.

Farrell, the retired Army computer expert, said he hopes to live to 100 because he believes the next five years will see momentous change in VR. Still a technology enthusiast, he believes the cost of systems will drop dramatically and become part of everyday living, even for seniors.

"It is not going to be as elementary as it is now. It is going to be very realistic and very responsive," he said. "It will probably be connected to your brain."

ynd
VIVE

TECH COMPANIES SIGN ACCORD TO COMBAT AI-GENERATED ELECTION TRICKERY

Major technology companies signed a pact to voluntarily adopt "reasonable precautions" to prevent artificial intelligence tools from being used to disrupt democratic elections around the world.

Executives from Adobe, Amazon, Google, IBM, Meta, Microsoft, OpenAI and TikTok gathered at the Munich Security Conference to announce a new framework for how they respond to AI-generated deepfakes that deliberately trick voters. Twelve other companies — including Elon Musk's X — are also signing on to the accord.

"Everybody recognizes that no one tech company, no one government, no one civil society organization is able to deal with the advent of this technology and its possible nefarious use on their own," said Nick Clegg, president of global affairs for Meta, the parent company of Facebook and Instagram, in an interview ahead of the summit.

The accord is largely symbolic, but targets increasingly realistic AI-generated images, audio and video "that deceptively fake or alter the appearance, voice, or actions of political candidates, election officials, and other key stakeholders in a democratic election, or that provide false information to voters about when, where, and how they can lawfully vote."

The companies aren't committing to ban or remove deepfakes. Instead, the accord outlines methods they will use to try to detect and label deceptive AI content when it is created or distributed on their platforms. It notes the companies will share best practices with each other and provide "swift and proportionate

responses" when that content starts to spread.

The vagueness of the commitments and lack of any binding requirements likely helped win over a diverse swath of companies, but disappointed advocates were looking for stronger assurances.

"The language isn't quite as strong as one might have expected," said Rachel Orey, senior associate director of the Elections Project at the Bipartisan Policy Center. "I think we should give credit where credit is due, and acknowledge that the companies do have a vested interest in their tools not being used to undermine free and fair elections. That said, it is voluntary, and we'll be keeping an eye on whether they follow through."

Clegg said each company "quite rightly has its own set of content policies."

"This is not attempting to try to impose a straitjacket on everybody," he said. "And in any event, no one in the industry thinks that you can deal with a whole new technological paradigm by sweeping things under the rug and trying to play whack-a-mole and finding everything that you think may mislead someone."

Several political leaders from Europe and the U.S. also joined the announcement. European Commission Vice President Vera Jourova said while such an agreement can't be comprehensive, "it contains very impactful and positive elements." She also urged fellow politicians to take responsibility to not use AI tools deceptively and warned that AI-fueled disinformation could bring about "the end of democracy, not only in the EU member states."

The agreement at the German city's annual security meeting comes as more than 50 countries are due to hold national elections in 2024. Bangladesh, Taiwan, Pakistan and most recently Indonesia have already done so.

Attempts at AI-generated election interference have already begun, such as when AI robocalls that mimicked U.S. President Joe Biden's voice tried to discourage people from voting in New Hampshire's primary election last month.

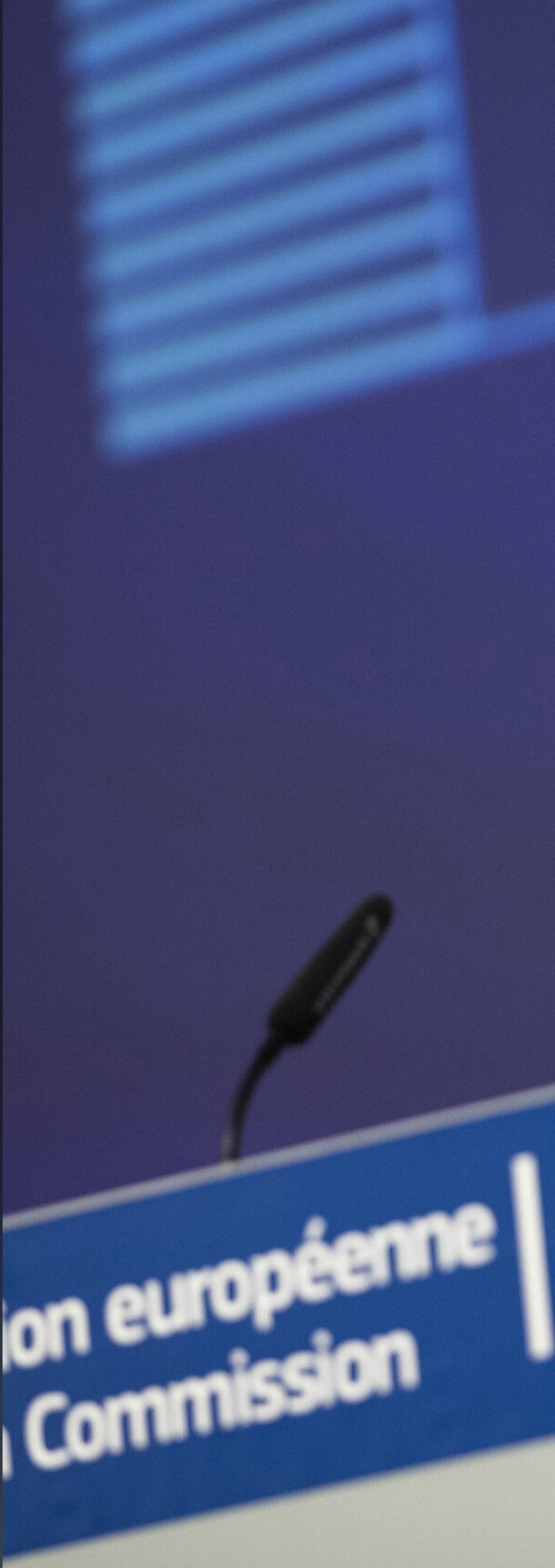
Just days before Slovakia's elections in November, AI-generated audio recordings impersonated a candidate discussing plans to raise beer prices and rig the election. Fact-checkers scrambled to identify them as false as they spread across social media.

Politicians also have experimented with the technology, from using AI chatbots to communicate with voters to adding AI-generated images to ads.

The accord calls on platforms to "pay attention to context and in particular to safeguarding educational, documentary, artistic, satirical, and political expression."

It said the companies will focus on transparency to users about their policies and work to educate the public about how they can avoid falling for AI fakes.

Most companies have previously said they're putting safeguards on their own generative AI tools that can manipulate images and sound, while also working to identify and label AI-generated content so that social media users know if what they're seeing is real. But most of those proposed solutions haven't yet rolled out and the companies have faced pressure to do more.



That pressure is heightened in the U.S., where Congress has yet to pass laws regulating AI in politics, leaving companies to largely govern themselves.

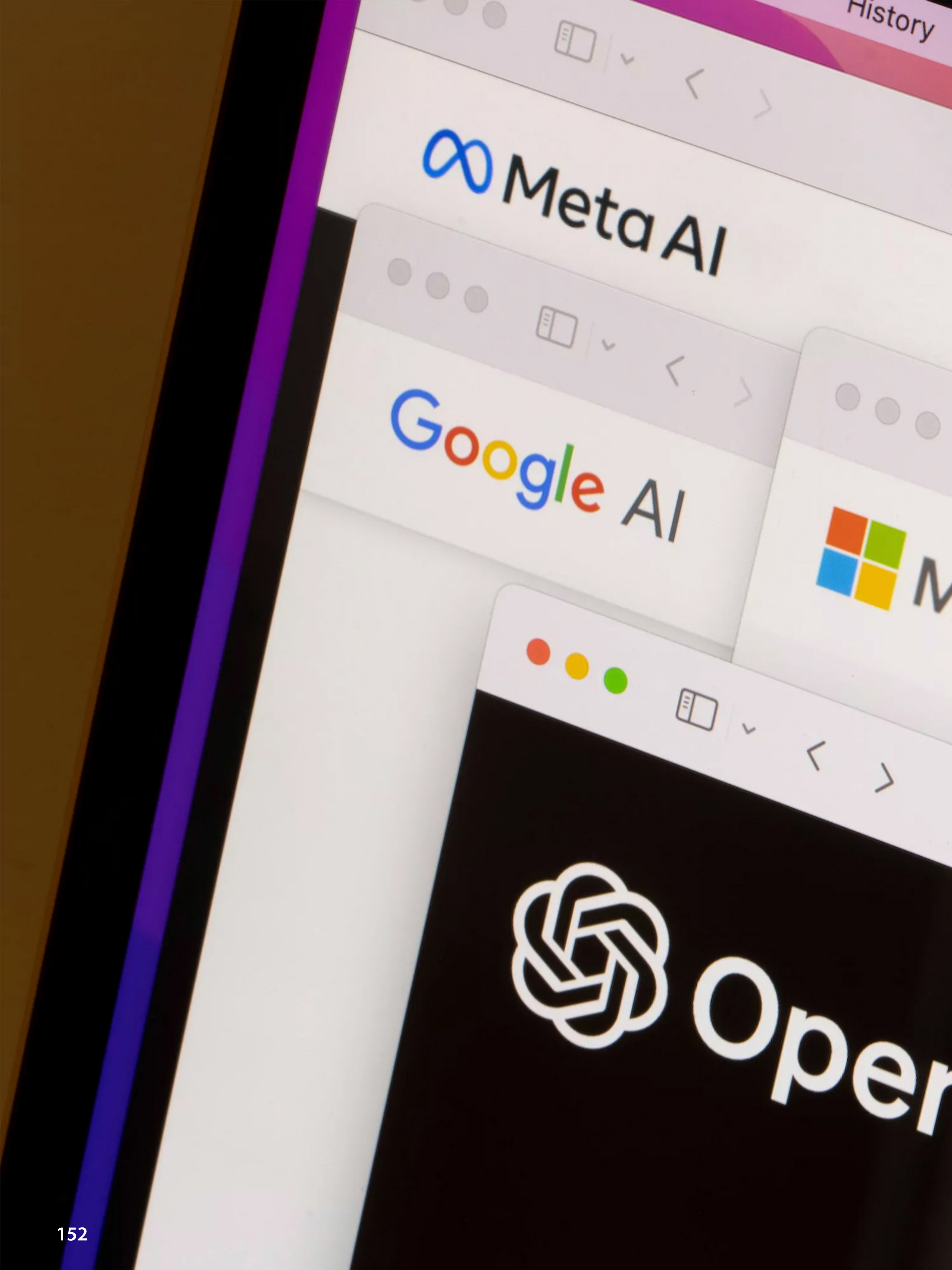
The Federal Communications Commission recently confirmed AI-generated audio clips in robocalls are against the law, but that doesn't cover audio deepfakes when they circulate on social media or in campaign advertisements.

Many social media companies already have policies in place to deter deceptive posts about electoral processes — AI-generated or not. Meta says it removes misinformation about "the dates, locations, times, and methods for voting, voter registration, or census participation" as well as other false posts meant to interfere with someone's civic participation.

Jeff Allen, co-founder of the Integrity Institute and a former Facebook data scientist, said the accord seems like a "positive step" but he'd still like to see social media companies taking other actions to combat misinformation, such as building content recommendation systems that don't prioritize engagement above all else.

Lisa Gilbert, executive vice president of the advocacy group Public Citizen, argued that the accord is "not enough" and AI companies should "hold back technology" such as hyper-realistic text-to-video generators "until there are substantial and adequate safeguards in place to help us avert many potential problems."

In addition to the companies that helped broker the agreement, other signatories include chatbot developers Anthropic and Inflection AI; voice-clone startup ElevenLabs; chip designer Arm Holdings; security companies McAfee and


History
Meta AI
Google AI

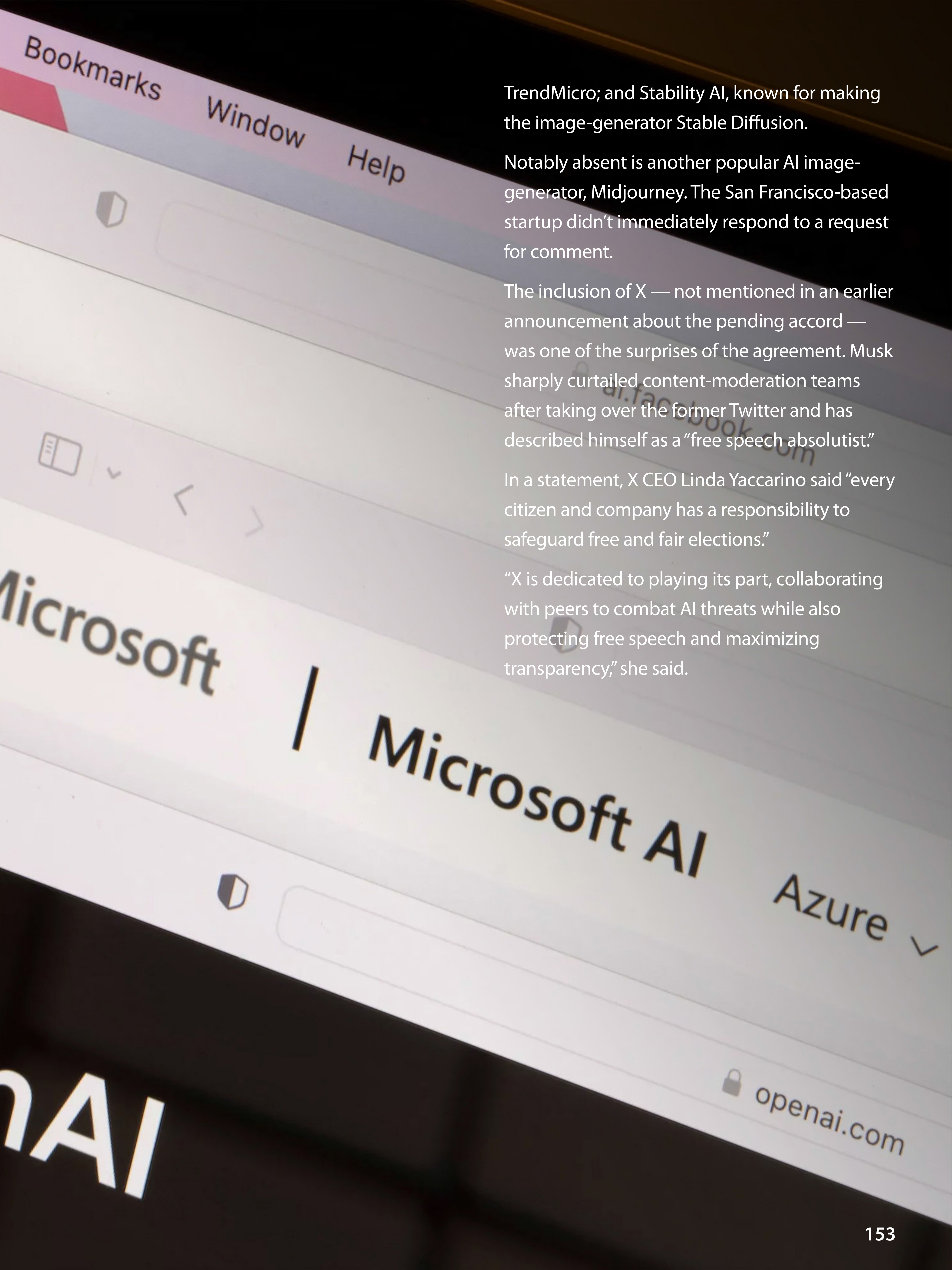
TrendMicro; and Stability AI, known for making the image-generator Stable Diffusion.

Notably absent is another popular AI image-generator, Midjourney. The San Francisco-based startup didn't immediately respond to a request for comment.

The inclusion of X — not mentioned in an earlier announcement about the pending accord — was one of the surprises of the agreement. Musk sharply curtailed content-moderation teams after taking over the former Twitter and has described himself as a "free speech absolutist."

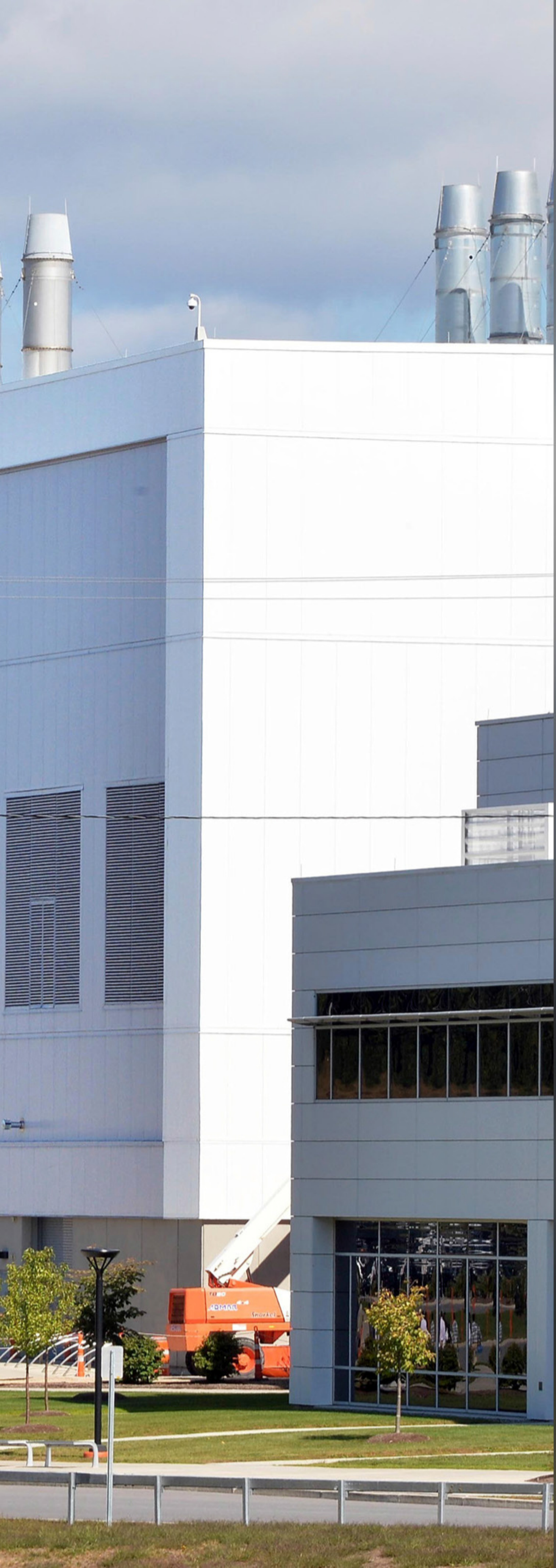
In a statement, X CEO Linda Yaccarino said "every citizen and company has a responsibility to safeguard free and fair elections."

"X is dedicated to playing its part, collaborating with peers to combat AI threats while also protecting free speech and maximizing transparency," she said.



BIDEN ADMIN PROVIDING $1.5 BILLION TO GLOBALFOUNDRIES TO MAKE COMPUTER CHIPS IN NEW YORK AND VERMONT

GLOBALFOUNDRIES



The Biden administration said this week that the government intends to provide $1.5 billion to the computer chip company GlobalFoundries to expand its domestic production in New York and Vermont.

The announcement is the third award of direct financial support for a semiconductor company under the 2022 CHIPS and Science Act. The law enables the government to invest more than $52 billion to revitalize the manufacturing of computer chips in the United States as well as advance research and development.

“The chips that GlobalFoundries will make in these new facilities are essential,” Commerce Secretary Gina Raimondo said on a call with reporters. “They power sophisticated military equipment, electric vehicles. They assure smartphones have the latest features, enable faster Internet connections for Americans.”

In addition to the direct funding, the government would also provide loans worth up to $1.6 billion, with a total combination of public and private investment expected to equal roughly $12.5 billion.

GlobalFoundries intends to use the funding to help pay for the construction of a new advanced chip factory in Malta, New York, increase production at its existing plant in Malta as part of a strategic agreement with General Motors, and revitalize its plant in Burlington, Vermont.

The projects are expected to create 1,500 manufacturing jobs and 9,000 construction jobs over the next decade. As part of the terms of the deal, $10 million would be dedicated to training workers and GlobalFoundries will extend its existing $1,000 annual subsidy for child care and child care support services to construction workers.

Senate Majority Leader Chuck Schumer, D-N.Y., was an architect of the law that enables the funding of chips factories, a technology that he said was as essential to the U.S. economy and national security as food. He said in an interview that the United States could be vulnerable to disruptions as it was during the coronavirus pandemic when auto plants lacked enough chips to keep making vehicles.

"The Democrats are going to do what it takes to see that other countries — China, Russia and others — don't gain economic advantage over all of us," Schumer said.

With a major election this year that puts control of the White House and Congress on the line, the health of the U.S. economy has been a serious concern. Republican lawmakers have stressed that inflation rates that peaked in 2022 have hurt family's buying power, an immediate pressure point that has hurt President Joe Biden's approval.

But Democrats have stressed their efforts to ease inflation and the long-term investments that they say will drive growth forward, such as the investments in computer chip production and infrastructure.

Schumer also said that these investments — which had a degree of bipartisan support — reflected the Democrats' emphasis on investing in the country's in ways that could potentially pay off in the coming decades.

"People want to see we have a future," Schumer said. "It makes a huge impression on the American people."

Image: Richard Vogel

SOME VIDEO GAME ACTORS ARE LETTING AI CLONE THEIR VOICES. THEY JUST DON'T WANT IT TO REPLACE THEM

If you are battling a video game goblin who speaks with a Cockney accent, or asking a gruff Scottish blacksmith to forge a virtual sword, you might be hearing the voice of actor Andy Magee.

Except it's not quite Magee's voice. It's a synthetic voice clone generated by artificial intelligence.

As video game worlds get more expansive, some game studios are experimenting with AI tools to give voice to a potentially unlimited number of characters and conversations. It also saves time and money on the "vocal scratch" recordings game developers use as placeholders to test scenes and scripts.

The response from professional actors has been mixed. Some fear that AI voices could replace all but the most famous human actors if big studios have their way. Others, like Magee, have been willing to give it a try if they're fairly compensated and their voices aren't misused.

"I hadn't really anticipated AI voices to be my break into the industry, but, alas, I was offered paid voice work, and I was grateful for any experience I could get at the time," said Magee, who grew up in Northern Ireland and has previously worked as a craft brewery manager, delivery driver and farmer.

He now specializes in voicing a diverse range of characters from the British Isles, turning what he used to consider a party trick into a rewarding career.

AI voice clones don't have the best reputation, in part because they've been misused to create convincing deepfakes of real people — from U.S. President Joe Biden to the late Anthony Bourdain — saying things they never said. Some early attempts by independent developers to add them to video games have also been poorly received, both by gamers and actors — not all of whom consented to having their voices used in that way.

Most of the big studios haven't yet employed AI voices in a noticeable way and are still in ongoing negotiations on how to use them with Hollywood's actors union, which also represents game performers. Concerns about how movie studios will use AI helped fuel last year's strikes by the Screen Actors Guild-American Federation of Television and Radio Artists but when it

comes to game studios, the union is showing signs that a deal is likely.

Sarah Elmaleh, who has played the Cube Queen in Fortnite and numerous other high-profile roles in blockbuster and indie games, said she has "always been one of the more conservative voices" on AI-generated voices but now considers herself more agnostic.

"We've seen some uses where the (game developer's) interest was a shortcut that was exploitative and was not done in consultation with the actor," said Elmaleh, who chairs SAG-AFTRA's negotiating committee for interactive media.

But in other cases, she said, the role of an AI voice is often invisible and used to clean up a recording in the later stages of production, or to make a character sound older or younger at a different stage of their virtual life.

"There are use cases that I would consider with the right developer, or that I simply feel that the developer should have the right to offer to an actor, and then an actor should have the right to consider that it can be done safely and fairly without exploiting them," Elmaleh said.

SAG-AFTRA has already made a deal with one AI voice company, Replica Studios, announced last month at the CES gadget show in Las Vegas. The agreement — which SAG-AFTRA President Fran Drescher described as "a great example of AI being done right" — enables major studios to work with unionized actors to create and license a digital replica of their voice. It sets terms that also allow performers to opt out of having their voices used in perpetuity.

Preset
Monitor
Volume

Image: Richard Vogel

“Everyone says they’re doing it with ethics in mind,” but most are not and some are training their AI systems with voice data pulled off the internet without the speaker’s permission, said Replica Studios CEO Shreyas Nivas.

Nivas said his company licenses characters for a period of time. To clone a voice, it will schedule a recording session and ask the actor to voice a script either in their regular voice or the voice of the character they are performing.

“They control whether they wish to go ahead with this,” he said. “It’s creating new revenue streams. We’re not replacing actors.”

It was Replica Studios that first reached out to Magee about a voice-over audio clip he had created demonstrating a Scottish accent. Working from his home studio in Vancouver, British Columbia, he’s since created a number of AI replicas and pitched his own ideas for them. For each character he’ll record lines with distinct emotions — some happy, some sad, some in battle duress. Each mood gets about 7,000 words, and the final audio dataset amounts to several hours covering all of a character’s styles.

Once cloned, a paid subscriber of Replica’s text-to-speech tool can make that voice say pretty much anything — within certain guidelines.

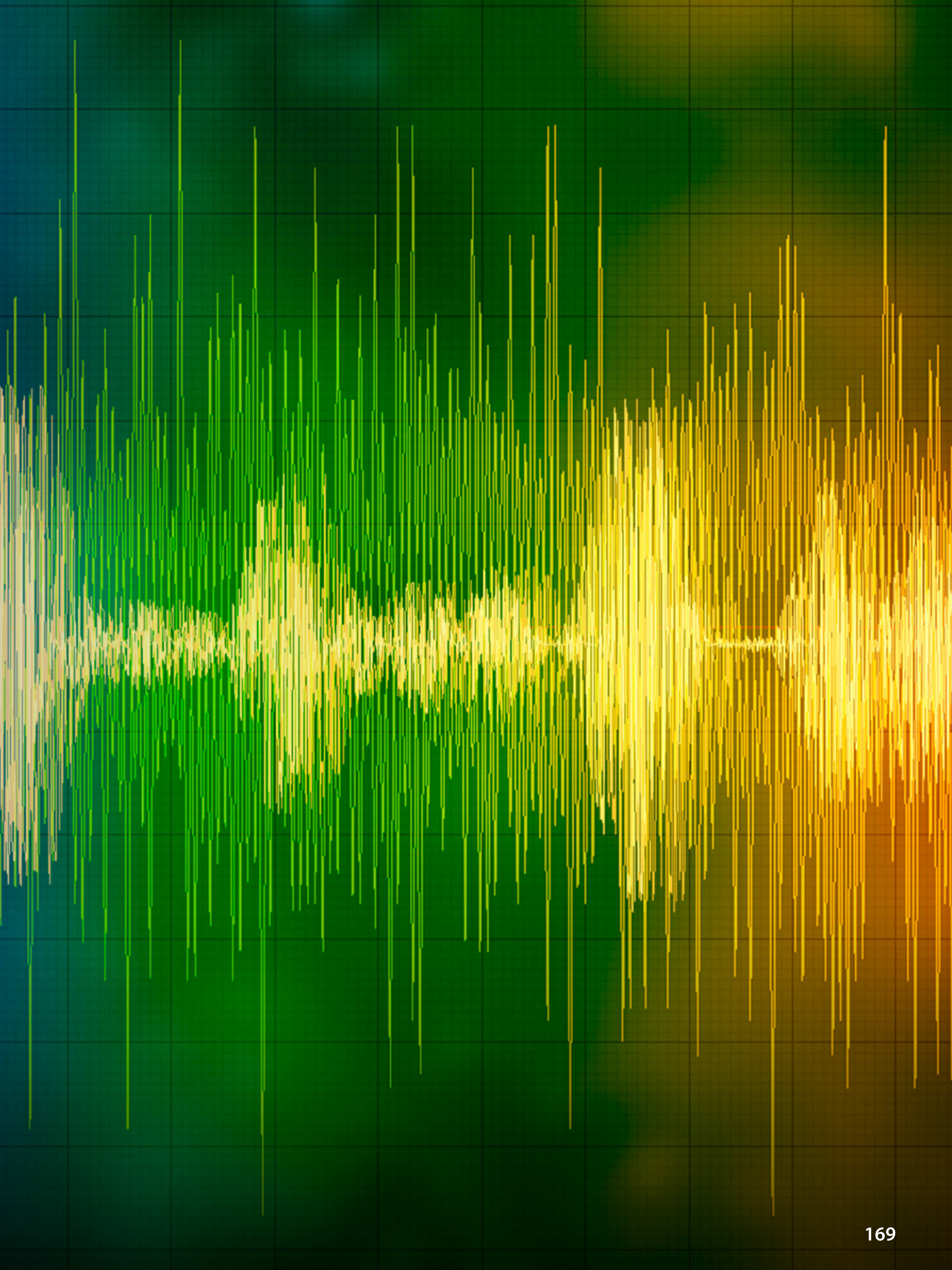
Magee said the experience has opened doors to a range of acting experiences that don’t involve AI — including a role in the upcoming strategy game Godsworn.

Voice actor Zeke Alton, whose credits include more than a dozen roles in the Call of Duty military action franchise, hasn’t yet agreed to lending his voice to an AI replica. But he understands why studios might want them as they try to scale up game franchises such as Baldur's Gate and Starfield where players can explore vast, open worlds and encounter elves, warlocks or aliens at every corner.

"How do you populate thousands of planets with walking, talking entities while paying every single actor for every single individual? That just becomes unreasonable at a point," said Alton, who also sits on the SAG-AFTRA negotiating committee for interactive media.

Alton is also open to AI tools that reduce some of the most physically straining work in creating game characters — the grunts, shouts and other sounds of characters in battle, as well as the movements of jumping, striking, falling and dying required in motion-capture scenes.

"I'm one of those people that is not interested so much in banning AI," Alton said. "I think there's a way forward for the developers to get their tools and make their games better, while bringing along the performers so that we maintain the human artistry."



MICROSOFT IS MAKING 4 EXCLUSIVE XBOX VIDEO GAMES AVAILABLE TO RIVAL CONSOLES

Several exclusive Xbox games will be soon making their way to rival consoles, the video gaming brand and its parent company, Microsoft, announced.

In a special edition of the Official Xbox Podcast, Microsoft Gaming CEO Phil Spencer confirmed that four Xbox games will no longer be exclusive. That means players should be able to access them on other companies' platforms.

crosoft

Player (1)

Spencer did not provide a firm timeframe or identify the four games but said that two will be "community-driven" games and two will be smaller titles.

"The teams that are building those games have announced plans that are not too far away," he said. "I won't be talking about the titles specifically, but I think when they come out, it'll make sense."

He did say that Microsoft-owned Bethesda titles Starfield and Indiana Jones were not among them.

Makers of gaming hardware often license popular video games in hopes of getting consumers to buy the devices that hold their exclusive rights.

Xbox's announcement suggests that the brand is rethinking that strategy. While Microsoft maintained that there was no fundamental change to its exclusivity approach, Spencer noted that he believes games that are exclusive to one piece of hardware "are going to be a smaller and smaller part of the game industry" within the next five or 10 years.

Microsoft has already been moving away from this through its "Game Pass" subscription service that works something like a Netflix for video games.

The tech giant's recent acquisition of video game maker Activision Blizzard allows that service to grow even further. Xbox President Sarah Bond announced that the first Activision Blizzard game on Xbox Game Pass will be Diablo IV, starting March 28.

"It's all part of our commitment to make Xbox, the Xbox experience, and the games that we build as widely available as possible," Bond said.

Xbox, which has previously ranked third in sales behind PlayStation and Nintendo, is expected to see a significant boost from the Activision Blizzard roster — which, beyond Diablo, also includes blockbuster games like Call of Duty and Overwatch.

Revenue for Microsoft's Windows-led personal computing business, which includes Xbox games and services, already grew 19% to $16.89 billion in the fourth quarter of 2023 — largely reflecting Activision Blizzard's impact. Microsoft's Xbox-related revenues grew by 61% for the period, although the company attributed 55 points of that figure to the addition of Activision Blizzard.

Microsoft completed its purchase of Activision Blizzard for $69 billion back in October, nearly two years after announcing the deal. The Redmond, Washington-based tech giant had to fend off ample global opposition from antitrust regulators and rivals over competition concerns.

Sony, for example, told regulators that it feared Microsoft will deprive its dominant PlayStation game console of popular Activision games or offer subpar versions. But as it sought to persuade regulators and judges to approve the Activision purchase, Microsoft repeatedly defended its approach as good for gaming, saying its goal was to get Activision games to more people on more platforms rather than trying to deprive those games from rival console-makers.

XBOX
XBOX

WALMART TO ACQUIRE SMART TV MAKER VIZIO FOR $2.3 BILLION IN BID TO BOOST ITS ADVERTISING BUSINESS

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Scan to learn more.
Astonishing 4K detail & clarity.
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Walmart is buying the smart TV maker Vizio for $2.3 billion as it attempts to expand its rapidly growing advertising business to compete with Amazon.

If completed, the deal would give Walmart access to Vizio's SmartCast operating system, allowing the retail behemoth to offer its suppliers the ability to display ads on streaming devices.

Walmart has been ramping up its media and ad business with Walmart Connect, giving advertisers access to Walmart's massive customer base. In its earnings release on Tuesday, Walmart said its global advertising business grew approximately 28% to $3.4 billion last year.

The moves come as Amazon announced last month it would start charging its Prime members $2.99 per month to keep their movies and TV shows ad-free, on top of the fee it charges for Prime: $14.99 per monh or $139 per year.

WHAT DOES WALMART HAVE TO GAIN FROM A TV MAKER?

Vizio's SmartCast system has 18 million active accounts and has grown by 400% since 2018. The companies say that Vizio's platform has more than 500 direct advertisers and that ads now account for the majority of the company's gross profit.

Makers of streaming hardware like Roku and Vizio have increasingly shifted their focus to ad revenue in recent years. Vizio launched its Vizio Ads business unit in 2019, claiming that it was "one of the few connected TV companies with

Walmart Connect

A través de una propuesta de valor única, basada en 3 diferenciadores.

Calidad y Volumen
de una audiencia inigualable.

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en el journey del cliente.

the device penetration, consumer opt-in and infrastructure to deliver meaningful scale."

Walmart recognized the Vizio's expanding consumer reach and jumped at the chance to supplement its Walmart Connect business.

"We believe the combination of these two businesses would be impactful as we redefine the intersection of retail and entertainment," said Seth Dallaire, executive vice president and chief revenue officer for Walmart U.S.

WHO ELSE IS STEPPING UP SCREEN ADVERTISING?

Other major streamers –- such as Netflix and Disney –- have embraced the dual model that allows them to earn revenue from ads and also offer subscribers the option to opt out with a higher fee.

However, in the constantly evolving streaming sector, it remains to be seen whether consumers are willing to pay more to see fewer ads when they are already paying subscription fees, often for multiple services. A big reason that so many viewers "cut the cord" and quit cable TV was frustration over their ever-increasing bills.

HOW THE COMPANIES' SHARES FARED

Vizio shares jumped nearly 15% in the afternoon, to $10.96 per share. Walmart, which reported sales and profit this week that topped Wall Street's expectations, rose 3.1% to $175.66 per share.

Shares of Roku, one of Vizio's main competitors, tumbled 6.4% after the announcement.

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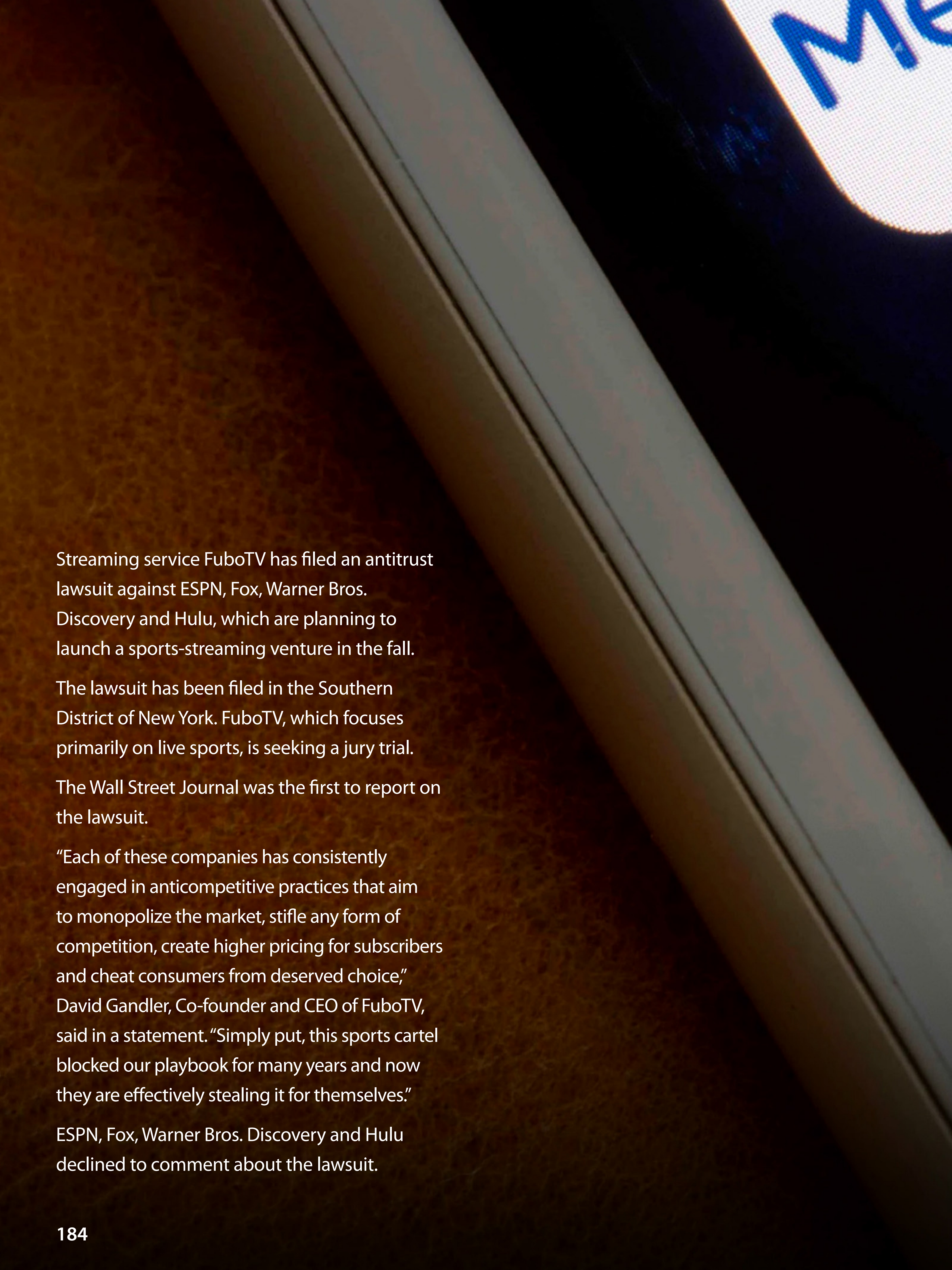

Streaming service FuboTV has filed an antitrust lawsuit against ESPN, Fox, Warner Bros. Discovery and Hulu, which are planning to launch a sports-streaming venture in the fall.

The lawsuit has been filed in the Southern District of New York. FuboTV, which focuses primarily on live sports, is seeking a jury trial.

The Wall Street Journal was the first to report on the lawsuit.

"Each of these companies has consistently engaged in anticompetitive practices that aim to monopolize the market, stifle any form of competition, create higher pricing for subscribers and cheat consumers from deserved choice," David Gandler, Co-founder and CEO of FuboTV, said in a statement. "Simply put, this sports cartel blocked our playbook for many years and now they are effectively stealing it for themselves."

ESPN, Fox, Warner Bros. Discovery and Hulu declined to comment about the lawsuit.

MeWe
fubo TV
fuboTV

FuboTV says in its filing that it has tried for years to offer a sports-only streaming service but has been prevented from doing so because of ESPN. Fox and Warner Bros. Discovery has imposed bundling requirements on FuboTV which it says forces "Fubo to spend hundreds of millions of dollars to license and broadcast content that its customers do not want or need."

"Faced with the threat of disruptive competition from Fubo and other upstarts, Defendants have responded by locking arms (and locking others out) to steal Fubo's core business idea — a sports-centric package of channels — while blocking Fubo from offering that same package," the company said in its court filing.

ESPN, Fox, Warner Bros. Discovery and Hulu announced their plans to offer a sports streaming service on Feb. 6. The three companies will each share one-third ownership in the joint venture. A name for the service and pricing will be announced at a later date.

FuboTV not only wants the proposed joint venture shut down, but it is seeking cash damages. If the court does not rule to do either, FuboTV is seeking restrictions on the joint venture so that competition remains in the marketplace.

FuboTV was founded in 2015. In its most recent quarterly filing last November, it reported 1.48 million paid subscribers in North America for the third quarter, an all-time high for the company.

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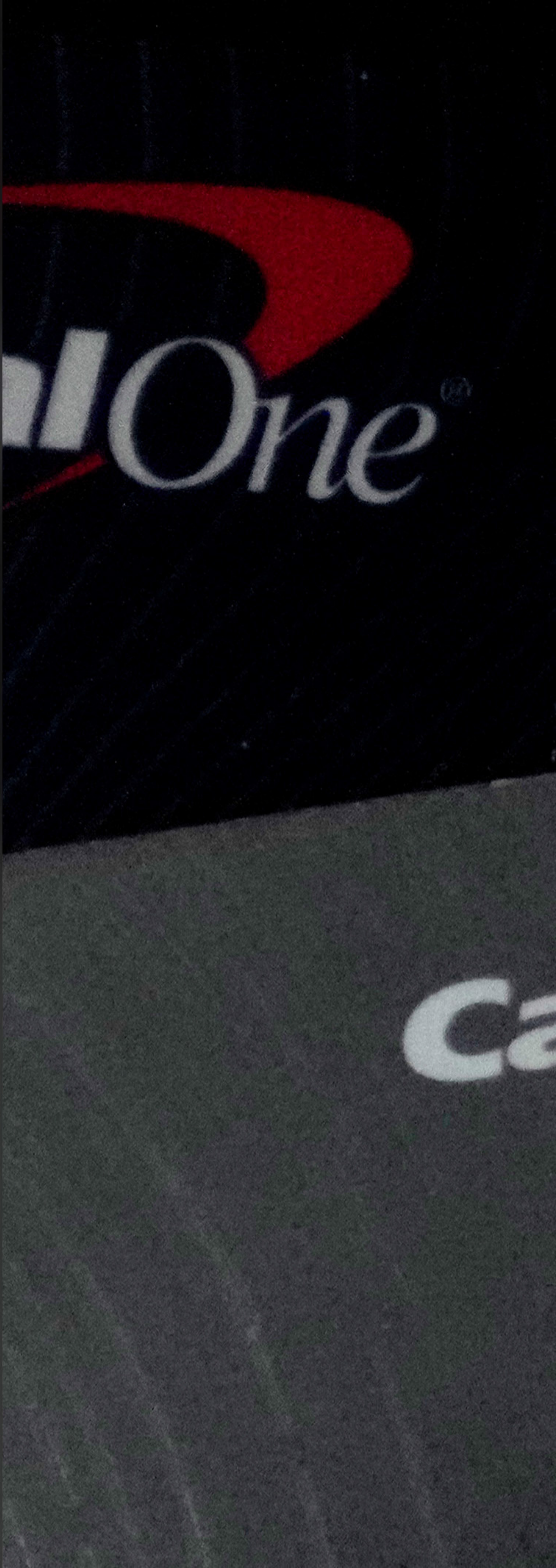
Image: Phil Nickinson

AMERICANS' RELIANCE ON CREDIT CARDS IS THE KEY TO CAPITAL ONE'S BID FOR DISCOVER



Americans have become increasingly reliant on their credit cards since the pandemic. So much so that Capital One is willing to bet more than $30 billion that they won't break the habit.

Capital One Financial announced this week that it would buy Discover Financial Services for $35 billion. The combination could potentially shake up the payments industry, which is largely dominated by Visa and Mastercard.

For customers of the companies, it might eventually mean bigger perks and more merchant

CapitalOne
apitalOne

acceptance of Discover cards, and potentially lead to more competition in the payments industry. But most of the benefits will be going to the companies themselves, as well as the merchants who accept these cards.

WHY IS THE DEAL IMPORTANT?

Some of the biggest issuers of credit cards are banks, like JPMorgan Chase and Citigroup. But Capital One and Discover are first and foremost credit card companies — like American Express, but with different clientele. They have tens of millions of customers and target their products at Americans who do not travel heavily outside the U.S. and would like to get more value out of their everyday purchases like gas, groceries and domestic travel. In other words, people who typically don't carry premium credit cards.

The combined company will have more loans to customers on its credit cards than JPMorgan and Citigroup combined. The merger also gives the Discover network the ability to fight on more equal footing with Mastercard and American Express in a way that it simply hasn't been able to in its 40-year history.

"You want the customer or merchant to choose you as a company, either for your products or for your brand, and this deal gives them plenty of opportunity to make that case," said Sanjay Sakhrani, a payments industry analyst with Keefe, Bruyette & Woods.

WHO USES CAPITAL ONE AND DISCOVER?

Capital One is one of the biggest credit card companies and banks in the country. It typically

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DISCOVE

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operates what is known in the credit card industry as a "barbell" business model — it issues credit cards to those with less-than-great credit as well as with super high credit, and little in between. The one group keeps a balance, bringing the company interest revenue, while the high-end customers spend heavily on their cards, bringing in fee revenue from merchants.

Discover's customers are fewer but intensely loyal to the company. The company consistently wins customer service awards, and its cash-back cards are considered among the most lucrative in the industry.

But Discover suffers from a perception that because its payment network is smaller than Visa, Mastercard or AmEx, it is less desirable. Also, Discover is largely unavailable outside the U.S. as a payment option.

Capital One executives said Tuesday that they would start allowing customers to use the Discover payment network shortly after the deal closes, which could happen by the end of the year. Capital One also plans to keep the Discover brand along with its cards, although the cards could be co-branded.

WHAT DOES THIS DEAL SAY ABOUT CREDIT CARD SPENDING?

This deal, at its core, is a big bet that Americans will keep running up their credit card balances.

Americans have been increasing their card balances quickly amid two years of high inflation. In the fourth quarter of 2023, Americans held $1.13 trillion on their credit cards, and aggregate household debt balances increased by $212 billion, up 1.2%, according to the latest data from the New York Federal Reserve.

Consumers are also paying higher interest rates on those balances. The average interest rate on a bank

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credit card is roughly 21.5%, the highest it's been since the Federal Reserve started tracking the data in 1994.

Critics of Capital One have long said the company relies heavily on those who can least afford to be carrying high interest balances on their credit cards. Historically Capital One has had higher default rates and higher 30-day delinquency rates than JPMorgan, Citi, Discover and American Express.

WHAT'S SO VALUABLE ABOUT DISCOVER?

It's virtually impossible to build a credit and debit card network from scratch in today's market. Capital One executives described previous efforts to do so as a "chicken or egg" problem, where it's hard to get merchants to sign up for a payment network when there are few customers, and vice versa.

Chicago-based Discover may be small but its infrastructure makes it poised to grow, particularly as more transactions move away from cash. The U.S. credit card industry is dominated by the Visa-Mastercard duopoly with AmEx being a distance third place and Discover an even more distant fourth place. Roughly $6.8 trillion is run on Visa's credit and debit network compared to the only $550 billion on Discover's network.

Owning Discover's network would enable Capital One to get revenue from fees charged for every merchant transaction that runs on the network.

It also turns Capital One into the rare credit card company that controls the cards, the payment network and the bank that issues the card. There's only one other company that has accomplished this to scale: American Express.

WILL REGULATORS APPROVE THE DEAL?

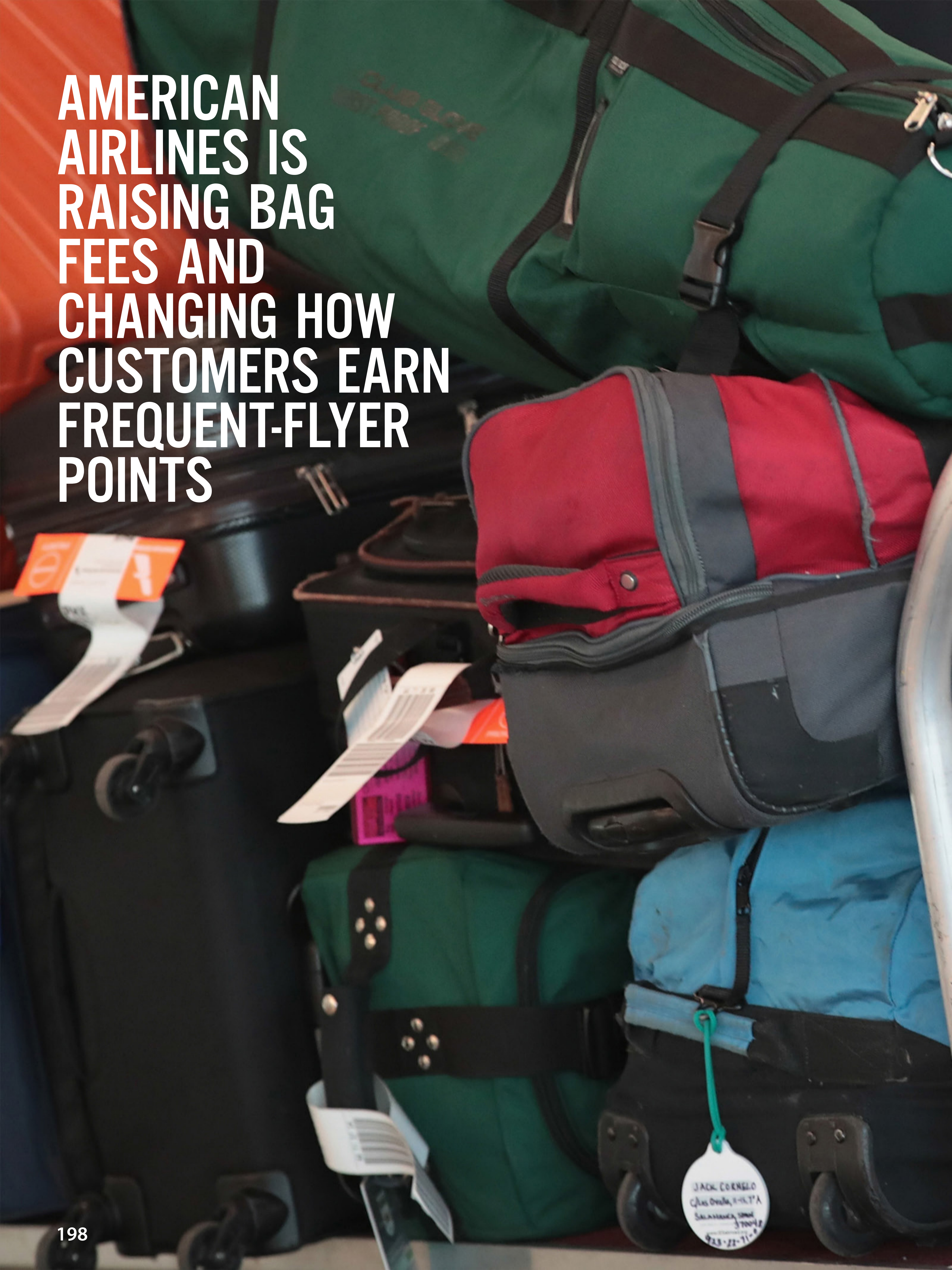
It's unclear whether the deal will pass regulatory scrutiny. Nearly every bank issues a credit card to customers but few companies are credit card companies first, and banks second. Both Discover — which was long ago the Sears Card — and Capital One started off as credit card companies that expanded into other financial offerings like checking and savings accounts.

Bank regulators have signaled for some time that they want to give more scrutiny to large mergers in the financial services sector. The combined Discover-Capital One company will have more than $600 billion in assets, making it bigger than most large regional banks in the country.

Consumer groups are expected to put heavy pressure on the Biden Administration to make sure the deal is good for consumers as well as shareholders. Left-leaning politicians like Sen. Sherrod Brown, the powerful Democratic chair of the Senate Banking Committee, are already calling for close scrutiny of the deal.

"The deal also poses massive anti-trust concerns, given the vertical integration of Capital One's credit card lending with Discover's credit card network," said Jesse Van Tol, president and CEO of the National Community Reinvestment Coalition.

AMERICAN AIRLINES IS RAISING BAG FEES AND CHANGING HOW CUSTOMERS EARN FREQUENT-FLYER POINTS



American Airlines
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American Airlines is raising the cost of checking bags and it is making other changes to push customers to buy tickets directly from the airline if they want to earn frequent-flyer points.

The airline said this week that checking a bag on a domestic flight will rise from $30 now to $35 online and $40 if purchased at the airport. The fee for a second checked bag will rise from $40 to $45 both online and at the airport.

American last raised bag fees in 2018.

American, based in Fort Worth, Texas, introduced bag fees in 2008 — $15 back then — to cope with the rising cost of jet fuel. Since then, they have become a steady revenue source for most major U.S. carriers. American easily led the industry by raising $1.4 billion in bag fees in 2022, the last year for which U.S. Transportation Department figures are available.

The airline is also raising bag fees by $5 for short international flights including those to Canada, Mexico and the Caribbean — now $35 for the first bag and $45 for the second.

The airline will generally allow customers to check at least one bag free if they hold elite status in American's loyalty program, buy a premium-class ticket or use an American-branded credit card.

In January, Alaska Airlines raised its checked-bag fees for most economy passengers from $30 to $35 for a first bag and from $40 to $45 for a second. JetBlue followed this month, raising its fees to $35 and $50.

"Airlines tend to move in herds, so when Alaska recently announced they would be upping their bag fee to $35, there was little doubt other

American
American Airlines
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airlines would soon follow," said Scott Keyes, founder of the travel site Going. "It's unlikely American will be the last."

Keyes noted that American's decision to charge customers more if they pay bag fees at the airport instead of when they buy their ticket mimics a tactic used by budget airlines such as Spirit and Frontier.

American will give a break to customers whose bags are slightly overweight or oversized. Instead of being hit with the full extra fee — ranging from $100 to $650 — graduated fees will start at $30 for bags that are no more than 3 pounds (1.36 kg) or three linear inches over the limits.

And it is cutting the cost of transferring points between frequent-flyer accounts.

At the same time, American announced that starting with tickets issued on May 1, customers will have to buy tickets directly from the airline or its partner carriers or from preferred online travel agencies if they want to earn points in its AAdvantage loyalty program. The airline said it will list the preferred travel agencies in late April. Corporate travelers won't be affected.

About 60% of American's ticket sales are already made directly through the airline, said Scott Chandler, vice president of revenue management.

The changes are part of a long shift by airlines away from using travel agents — and paying them commissions — and bringing ticket sales in-house.

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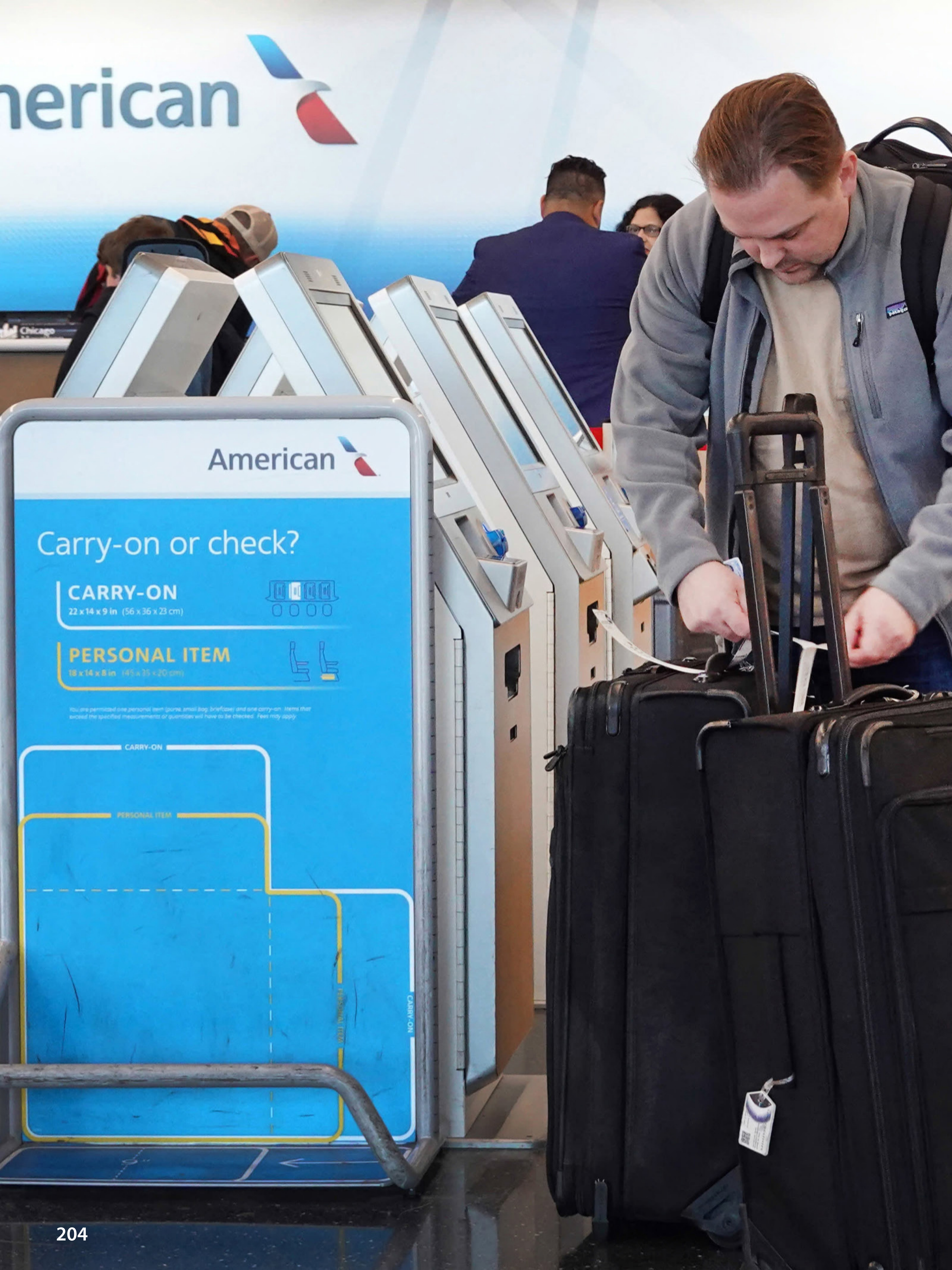
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“The old way of booking a ticket relied on agents having a ton of experience and understanding product attributes,” Chandler said in an interview. “The old technology doesn’t let us explain things very well, and it is a little more confusing for customers when we introduce new products.”

Chandler likened it to the way that Amazon.com explains features that it sells on the site.

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